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THE SIGNIFICANCE AT THE PRESENT TIME OF THE DIAGNOSIS OF BIOLOGIC FALSE POSITIVE REACTION *

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The significance of the biologic false positive reaction is as yet an unanswered challenge to our medical generation. Our energies in yesteryear were devoted to unearthing and conquering the disease, syphilis. In more or less the last half century we have witnessed the relative conquest of syphilis, beginning with the discovery of the etiologic agent, *Treponema pallidum* by Schaudinn in 1905, and followed closely by the introduction of a test for syphilis by Wassermann, applying the principles of Bordet and Gengou. The use of arsenic by Ehrlich and, finally, the introduction of penicillin by Mahoney sounded the death knell for syphilis. It is interesting that what appeared to be a closed chapter should have yielded so much information in the past five years that it has forced us to change many of our previous concepts concerning syphilis.

The introduction of the treponemal immobilization test in 1949 by Robert Nelson,[1] working at Johns Hopkins, has largely been responsible for our recent increase in knowledge concerning syphilis. This test promised, and has proved to be, a specific test for syphilis. Without the TPI test, each patient with a positive STS, in the absence of clear cut evidence for syphilis, became a problem in diagnosis. With the TPI test, for the first time in medical history, we are able to separate accurately the biologic false positive reactor from the syphilitic. The first part of this paper will be a summary of what we have learned in the six years we have used the TPI test. The last part will be devoted to a discussion of the as yet unsolved significance of the biologic false positive reaction.

In 1949, we established a TPI laboratory in conjunction with our STS laboratory in the Department of Dermatology at Columbia University. Our clinical material has largely come from the Columbia Presbyterian Medical Center, including the Vanderbilt Clinic. For many years all cases of syphilis have been referred to us; and for that reason, we have available a wealth of material adequately studied throughout the years.

As many of you know, the TPI test uses *Treponema pallidum* as an antigen and is based on an antibody distinct from reagin, on which all of the many STS tests are based. *Treponema pallidum* has as yet not been successfully cultured. It is collected for the test from rabbit testicular syphilomas and kept in actively motile form in an artificial medium. In essence,

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the TPI test is based upon the fact that, in the presence of active complement, the motile treponemes are immobilized if demonstrable amounts of the antibody are present in a patient's blood or spinal fluid. As the test uses *Treponema pallidum* as an antigen and an antibody distinct from reagin, it should be specific. In the experience of all who have used the test, it has proved to be specific for the treponematoses, that is, syphilis, yaws, pinta, and bejel. In our opinion, the test is specific with a possible error of about 1.5 per cent.

In accurately interpreting the results of the test, one must always remember the opinions which have been repeatedly stated. These opinions are as follows:

1. If treatment for syphilis is given in the primary or very early in the secondary phase of syphilis, the antibody may never develop.

2. If treatment is given early in the course of syphilis, the test may become negative with the passage of time.

3. If no treatment is given, or if given late in the course of the disease, the test probably remains positive for the life of the patient.

It may be of interest to show a table from our early work, which was reported in detail in the J.A.M.A.[2] in 1952, when we were studying the reliability of the results of the TPI test. In Table 1 are presented the results of the TPI test in patients in whom syphilis had been diagnosed on evidence other than the results of the standard serologic test of the blood for syphilis. This evidence includes results of dark field examinations, clinically typical secondary syphilis, tabes dorsalis, positive reaction of the spinal fluid in the serologic test for syphilis, congenital syphilis with stigmata and dementia paralytica.

In the group of primary syphilis, the interval from the time of the diagnosis of the chancre to the time of the treponemal immobilization test varied from eight to forty-eight years. The four negative results occurred in patients who had been adequately treated when the chancre was present.

In the group listed as having secondary syphilis, the interval from the time of diagnosis to the time of the treponemal immobilization test varied from two months to twenty-one years. The results of the treponemal immobilization tests were negative in two patients both of whom have had more than adequate treatment at the time their secondary lesions were present. All of the patients with congenital syphilis with stigmata, neurosyphilis, cardiovascular syphilis and gummata had positive TPI tests.

A study of possible passive transfer of the antibody from mother to child revealed the information shown in the graph.[3] As can be seen, the antibody responsible for the TPI test persists longer than reagin in the babies' blood and may persist up to six months. This is similar

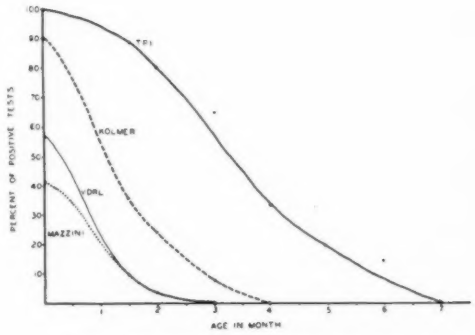
TABLE 1

RESULTS OF TREPONEMAL IMMOBILIZATION TESTS ON BLOOD OF PATIENTS WITH PROVED SYPHILIS*

Original Diagnosis †	No. of Patients	Results of TPI Test		
		Positive	Negative	Doubtful
Primary syphilis	30	24	4	2
Secondary syphilis	39	34	2	3
Congenital syphilis	10	10	–	–
Neurosyphilis	33	33	–	–
Cardiovascular syphilis	8	8	–	–
Gummas	3	3	–	–
Total	123	112	6	5

* This table was published originally in the article by J. Lowry Miller, et al: Treponemal Immobilization Test: Reliability of results for the diagnosis of syphilis, J.A.M.A. 49:987 (July 12) 1952.

† Patients are listed under the classification made at the time of diagnosis, which was made on evidence other than the result of the serologic test of the blood for syphilis. The treponemal immobilization tests were often made many years after the original diagnosis.



GRAPH 1. PERSISTENCE OF IMMOBILIZING ANTIBODY COMPARED WITH REAGIN IN NON-SYPHILITIC OFFSPRING FROM TREATED SYPHILITIC MOTHERS

Originally published in J. A. M. A. 154:1241 (April 10) 1954.[3]

to other natural antibodies such as herpes simplex. In interpreting the results of the TPI test in babies born of TPI positive mothers, one must remember this longer duration of the passively transferred antibody.

As our work progressed, certain facts at variance with our previous opinions became evident. The general opinion in 1950 was that of the various STS, the V.D.R.L. and Kolmer were more specific for syphilis and the tendency was to dismiss patients with a diagnosis of biologic false positive reaction who had positive Mazzini tests but negative V.D.R.L. and Kolmer tests. Table 2 illustrates how this

TABLE 2

REACTIONS OF STANDARD SEROLOGIC TESTS FOR SYPHILIS IN 1300 SPECIMENS FROM CASES OF SYPHILIS (TPI POSITIVE)

Test	Positive		Negative	
	No.	%	No.	%
Mazzini	1232	94.8	68	5.2
V.D.R.L.	1027	79.0	273	21.0
Kolmer	1017	78.2	283	21.8

did lead us to error as judged by the results of the TPI test. In 1300 specimens from patients with positive TPI tests, the V.D.R.L. and Kolmer were negative in approximately 20 per cent while the Mazzini was negative in 5 per cent. Viewed from this angle alone the Mazzini proved the better test.

However, the data contained in Table 3 must also be considered. Here the V.D.R.L. and the Kolmer were positive in approximately 60 per cent while the Mazzini was positive in 95 per cent of patients who had negative TPI tests. The close similarity of results of the V.D.R.L. and Kolmer tests is apparent. From the standpoint of the biologic false positive reactor group, the Kolmer and V.D.R.L. were wrong in 60 per cent while the Mazzini was wrong in 95 per cent of the patients. This higher rate of lack of specificity agreed with our former concept that the Kolmer and V.D.R.L were more useful in the diagnosis of syphilis, but the necessity for the TPI test is obvious, as all STS tests are too nonspecific.

TABLE 3

REACTIONS OF STANDARD SEROLOGIC TESTS FOR SYPHILIS IN 842 SPECIMENS FROM CASES OF BIOLOGIC FALSE POSITIVITY

Test	Positive		Negative	
	No.	%	No.	%
Mazzini	814	96.7	28	3.3
V.D.R.L.	487	57.8	355	42.2
Kolmer	474	56.3	368	43.7

We have also thought that a high titer in the STS was more likely to be syphilitic than a low titer. This is not always true in the light of the results of the TPI. This is shown by Table 4, in which

TABLE 4

COMPARISON OF V.D.R.L. FINDINGS IN 200 SPECIMENS FROM CASES OF BIOLOGIC FALSE REACTIVITY AND IN 200 SPECIMENS FROM CASES OF SYPHILIS

VDRL Titer	Biologic False Positivity		Syphilis	
	No.	%	No.	%
WP	62	31.0	82	41.0
P-1	64	32.0	52	26.0
P-2	36	18.0	34	17.0
P-4	18	9.0	12	6.0
P-8	11	5.5	10	5.0
P-16	7	3.5	4	2.0
P-32	1	0.5	2	1.0
P-64	1	0.5	4	2.0
	200	100	200	100

the V.D.R.L. titers of 200 specimens from patients with biologic false positive reactions are compared with an equal number from patients with syphilis. Patients with extremely high STS titers may prove to have negative TPI tests while those with

low STS titers may have positive TPI tests.

It early became evident that the TPI test was of no value in determining if more treatment was needed in a given patient. The test remains positive regardless of treatment unless it is given early in the course of the disease.

The purpose in presenting Table 5 is to show the great value of the TPI test in separating the syphilitic from the biologic false reactor. As will be noted, 45 per cent of these patients had been treated for syphilis, but did not have the disease, and 45 per cent of the patients who did have syphilis were not treated.

TABLE 5

COMPARISON OF RESULTS OF TPI TEST WITH DIAGNOSIS AND TREATMENT IN A GROUP OF PATIENTS FROM OUTSIDE PHYSICIANS STS POSITIVE OR WEAKLY POSITIVE IN ALL CASES

		Treated for Syphilis	Not Treated For Syphilis
TPI Positive	111	61	50
TPI Negative	166	75	91
	277	136	141

With the widespread routine use of the STS in hospital admissions, entrance into the Armed Forces, check-up in industry and by the medical profession at large, the number of positive STS will inevitably be a sizeable figure. With syphilis less widespread, it may be presumed that the biologic false positive reactions will be relatively larger in number. However, it must be emphasized that this diagnosis today should never be made unless a TPI test has been done.

The TPI test is expensive and requires critical and very careful work in the laboratory. Variations in the number of spirochetes obtained from rabbit to rabbit, the possible development of immobilizing antibody in the rabbits, the presence of adequate amounts of complement are all factors for which controls in the laboratory must be maintained. The test is also complicated by the necessity of using sterile techniques, by the presence of penicillin in many specimens and by the possibility of other nonspecific treponemocidal agents, such as the wide-spectrum antibiotics, or substances present in improperly cleaned collection tubes. For this reason, simpler, less expensive tests are needed. Such tests, now under investigation and using killed *Treponema pallidum*, include two agglutination tests, the immune adherance test, and the new *Treponema pallidum* complement fixation test developed by Portnoy [4] at Chapel Hill, North Carolina. He uses as an antigen a chemical fraction obtained by desoxycholate extraction of dead *Treponema pallidum* and performs a test similar to the Kolmer complement fixation test. The evidence to date seems to establish that the antibody used in the Portnoy test is distinct from the antibody which is the basis for the TPI test. It is necessary to use this test under carefully controlled conditions until its specificity is established. Our experience to date with this test makes us think that the test may approach the specificity of the TPI test.

From the summary of our experience which is in agreement with all those who have used the TPI test, it is apparent that it or a substitute specific test is a necessity in making the diagnosis of false positive reaction. The remainder of this paper will be devoted to a discussion of the little we have so far learned about the significance of the biologic false positive reaction. As you all know, there are two types of biologic false positive reactions, the temporary and persistent. We shall not discuss the temporary biologic false positive reaction except to say that the TPI test will quickly confirm the diagnosis and save the waiting period which is often a cause of nervous strain to the patient.

Table 6 shows the data which we published in J.A.M.A.[3] in 1954. The most significant finding in this table is the high percentage of biologic false reactions in the patients with acute disseminated lupus erythematosus. Coburn and Moore,[5]

TABLE 6

STS AND TPI RESULTS ON BLOOD IN PATIENTS ADMITTED FOR DISEASES OTHER THAN SYPHILIS *

Disease	No. of Cases	Pos.	Weak	Neg.	TPI Pos.	TPI Neg.	History of Syph.	Treat. Before TPI	Treat. After TPI
Acute Disseminated Lupus Erythematosus with L. E. cells	14	8	3	3	0	12 neg. 2 anti-compl.	0	4	0
Subacute Disseminated Lupus Erythematosus without L. E. cells	4	1	2	1	1	3	0	1	0
Discoid Lupus Erythematosus	4	4	0	0	2	2	0	1	1
Periarteritis	2	1	0	1	0	2	0	0	0
Subacute Bacterial Endocarditis	3	0	2	1	0	3	0	0	0
Sarcoidosis	10	8	1	1	9	1	2	4	5
Tuberculosis	5	3	2	0	5	0	2	4	1
Multiple Myeloma	4	1	0	3	1	3	0	0	0
Diabetes Mellitus	4	3	1	0	1	3	1	1	0
Cirrhosis of Liver	6	2	3	1	2	4	0	2	1

* This table was published originally in the article by J. Lowry Miller, et al: Studies with treponemal immobilizing test, J.A.M.A. 154:1241 (April 10) 1954.

Rein and Kostant,[6] Haserick and Long,[7] and others have reported that this disease was thought to be responsible for a biologic false positive reaction. Nine of our 11 patients with positive STS had negative TPI tests and the remaining two patients had anticomplementary tests. It has been noted previously that anticomplementary reactions are found in this disease. Coburn and Moore[5] have reported high levels of gamma globulins to be a constant characteristic in their cases of lupus erythematosus. Davis and coworkers[8] have shown that gamma globulin is anticomplementary. It has been noted in our laboratory that an unknown factor or factors, in the patients with acute lupus erythematosus uses more of the added complement in the TPI tests than in specimens from other diseases.

The eight patients with positive serologic tests in this group in the table were persistent false positive reactors. Four of these patients had been treated because of the positive serologic tests before the onset of symptoms of acute lupus erythematosus. No change in the serologic tests resulted. The positive serologic test was known to have been present for twenty-four years in the first case, six years in the second, and four years in the third and fourth. It is interesting to note, in the case in which a positive serologic test was present for twenty-four years, that it had been found when the patient was 3 years of age, at which time she was treated with arsenic and bismuth. Her mother had been treated because of a positive serologic test before the patient was born. The mother's serologic test is now negative, but the treponemal immobilizing test is positive.

A second patient had a similar history. She was seen at 8 years of age with Sydenham's chorea and a positive serologic test. Both parents had strongly positive serologic tests. The parents and the patient were treated with arsenic and bismuth. The patient was 33 years old and had two healthy children, 9 and 2 years of age, both with negative serologic and treponemal immobilizing tests. The patient's treponemal immobilizing tests have been negative twice and the serologic tests repeatedly positive. The patient's mother has positive serologic tests, and the treponemal immobilizing test is positive. Neither patient shows signs of congenital syphilis. It is impossible to determine with certainty if these

persons had had biologically false positive reactions for all these years or positive treponemal immobilizing tests had become negative when treatment was given early.

Some observers have reported that sarcoidosis is one of the diseases outstanding among the conditions so far identified in a substantial proportion of biologic false positive reactors. Our findings have not borne this out. Of 102 patients with sarcoidosis established by biopsy, clinical, and laboratory findings, 14 had persistent positive serologic tests. Ten of the 11 patients with persistently positive serologic tests had positive treponemal immobilizing tests. In our opinion one should be very hesitant in making the diagnosis of a biological false positive reaction in sarcoidosis.

The group of biologic false positive reactors which we have reported were gathered from a hospital population who had been admitted for illness of greater or lesser degree. More recently we have been studying a group of patients who were collected largely because of a positive STS with negative TPI test but apparently not ill. In a group of some 600 patients falling into this classification 75 have been studied thoroughly.

The following tests have been performed on all 75 cases of persistent biologic false positive reaction: Complete blood counts, urinalyses, sedimentation rates, protein partitions, cholesterols and esters, Coombs' test, cold agglutinations, alkaline phosphates, LE preps, brucella agglutinations, cephalin flocculations, thymol turbidities, paper electrophoreses, heterophile antibodies. In this carefully sudied group, one or more of the tests performed have been positive. One of the most frequent findings is a positive cephalin flocculation or a positive thymol turbidity. Moore and Lutz [9] also found this phenomenon. They were unable to demonstrate any evidence of liver damage and concluded that the same mechanism responsible for the positive STS was also responsible for the positive cephalin flocculation and positive thymol turbidity. We have examples of women who with each pregnancy develop positive STS which disappear between pregnancies.

To date from this group, the percentage of patients developing serious illness has been small. However, the potential danger of serious future disease in those with persistent biologic false positive reaction is real. A pattern of recurrent minor signs and symptoms such as unexplained fever, transitory joint pains, should be taken with much more seriousness in the patient with a persistent biologic false positive reaction. At the present time it appears that systemic lupus erythematosus is the disease most of these patients will develop if they eventuate into serious illness.

We have not had the opportunity of studying patients with leprosy in this study. Leprosy has long been known to cause persistent biologic false positive reactions in about 60 per cent. It would be interesting to perform the additional tests to see if we find a difference in the degree of cephalin flocculation, thymol turbidity positivity in patients with leprosy in whom the STS is positive as compared with those with negative STS.

In conclusion I should like to emphasize that the TPI test has proved specific and that it, or a simpler test of the same type, is a necessity in the diagnosis of biologic false positive reaction. If this reaction proves to be of the persistent type, then the physician must observe the patient and carefully consider minor symptoms, especially those which recur.

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THE IMPORTANCE OF THE TEAM APPROACH TO THE REHABILITATION OF CLEFT PALATE CASES

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Because of the variety of problems presented by the person with a cleft palate, no one specialty can attempt to deal with them all. Those who are interested in the problem realize that a cleft palate is not just a "hole in the head" to be closed up in any fashion, or just a speech defect, or just a malocclusion. All of these conditions are related and interdependent, along with the emotional and intellectual aspects. Hence, the multiphasic, or team approach has been developed and is gaining wide acceptance as the most productive way of rehabilitating these patients.

In 1816, von Graefe performed the first staphylorraphy by cauterizing the margins and using sutures to approximate the tissues. Previously, the occasional cases of cleft lip and palate mentioned in medical literature were treated by elaborate devices designed to restore the missing parts. After von Graefe, daring operations became more frequent and developed around three methods, i.e., median suture, compression, and flap techniques for closure of the clefts. Modern surgical techniques nearly all represent some modification of the median suture procedure introduced by von Langenbeck in 1861.

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With the advent of modern dentistry in the middle of the nineteenth century, a new interest in prosthetic appliances was aroused. The failure of much of the surgery served as a spur to devise various types of prostheses and different means of retention. At the same time surgeons were busy exploring various operative techniques. Most of the early prosthetic work was done to correct the results of surgical failures rather than as a preferred procedure.

As more and more interest in the overall problem has been evinced by oral and plastic surgeons, dentists, orthodontists, prosthodontists, and speech therapists, the value of a united effort has become more and more apparent. Recent study and research in growth patterns has led to a new evaluation of the total treatment of cleft palate. The many questions which arise in trying to find the most suitable treatment for each case can only be answered by grouping services and correlating information. Then each specialist can render the fullest value of his particular field. The team approach, therefore, implies much more than simply a number of people looking at one individual. A team should be composed of members who can share in the group experience for their own enrichment as well as that of the patient. Although each member comes to the team as an individual representing a different discipline, he should be able to give of his skill and to understand the contributions of his teammates as they work toward the common goal of rehabilitation.

T. M. Graber,[2] in his discussion of the "Changing Philosophies in Cleft Palate Management" pictures the cleft palate team as functioning in a manner illustrated in Figure 1. Cooper[1] likens the cleft palate team to a wheel in which each member of the team represents a spoke and bears the burden of treatment at different times. (Figure 2) This analogy stresses the interdependence and the cooperation which must exist among the members for the team to accomplish maxi-

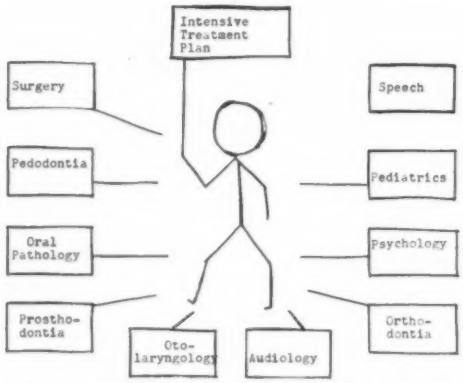

Figure 1. The essential elements for complete cleft palate rehabilitation. (From Graber, T. M.: Changing philosophies in cleft palate management, J. Pediat. 37:400 (Sept) 1950).

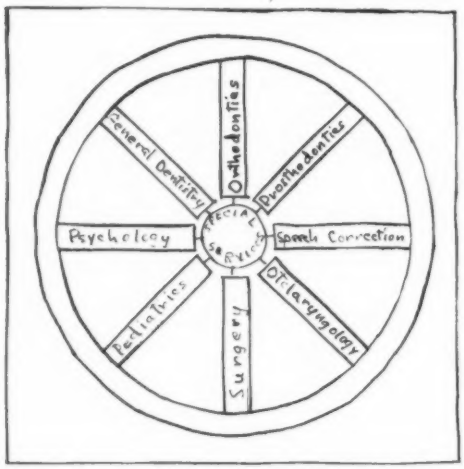

Figure 2. Services in a co-ordinated program. Other services to be added as need arises. (From Cooper, Herbert K.: Integration of services in the treatment of cleft lip and cleft palate, J. Am. Dent. A. 47:27 (July) 1953.

mum results. If one discipline dominates the team, or if another is not interested and fails to do his share, then the wheel will be lopsided and the team loses its effectiveness.

The essential services are those of pediatrics, surgery, dentistry, orthodontia, prosthodontia, speech therapy, otolaryngology, psychology, and social service. Other services are added as the need arises. Each member of the team has a peculiar responsibility on the team depending upon his specialty.

PEDIATRICS

The pediatrician is in the position of being able to guide the parents as soon as the baby is born. It is a severe shock to the parents to see a baby with a cleft lip and/or palate and to know that they have produced a malformed child. Their first reaction is usually one of despair, "Why did this happen to us?", followed by one of guilt, "What did we do?"

The manner in which the pediatrician handles these attitudes and reactions is all-important in the later adjustment of the parents toward the child and consequently in the adjustment of the child himself toward the handicap.

The pediatrician can steer the parents' thinking toward the positive aspects of what *can* be done rather than letting them dwell on the negative questions of what had not been done. He can reassure them that, cosmetically, the baby can be provided with a normal facial structure, and functionally, with adequate oral structures for speech and nutrition. It is the responsibility of the pediatrician, therefore, to acquaint the parents with a cleft palate team or with whatever agencies or resources are available in the community for cleft palate rehabilitation.

The child with a cleft palate and particularly one with both lip and palate cleft presents feeding problems with which the pediatrician must be prepared to cope. Since lip surgery is usually not done until the child has at least regained its birth weight and gives evidence of being a healthy baby, then it is very important that the baby's feeding be carefully supervised. Nutritional factors assume larger proportions in the care of the cleft palate child because of the surgery which most of them must undergo.

SURGERY

When a child has both cleft lip and palate there is not much controversy concerning the surgical closure of the lip. This procedure is usually carried out as soon as the baby is judged strong enough. Normally this is about the third or fourth month. Early closure of the lip is de-

sirable for several reasons. First, it improves the appearance of the baby. The initial shock and disappointment of the parents is greatly alleviated after the baby's face begins to assume a more normal contour. Although secondary operations to improve the shape of the lip and nose may be necessary, they are seldom emergency measures.

Secondly, the feeding problem presented by the open lip is helped by having the lip line made intact. The baby is now capable of more normal sucking and swallowing movements.

Thirdly, the molding influence of the lip and cheek movements can help to establish the proper shape and contour of the upper dental arch by maintaining the proper position of the divided maxillae and thus encourage the teeth to erupt in their proper location.

Surgery on the palate is another question which can best be answered through the team approach. As indicated earlier, the traditional treatment of cleft palate was always by surgery. However, because that has so often been unsuccessful, many workers have felt that a re-evaluation of surgical procedures, and especially of the timing of surgery, should be undertaken.

With the help of the orthodontist, prosthodontist, and speech therapist, the surgeon can better decide how and when to operate. According to Slaughter,[3] surgery can do one of two things:

1. It can aid in directing natural growth processes through the establishment of muscle balance across the defect; or

2. It can grossly interfere with the blood supply, result in introduction of abnormal amounts of scar tissue or destruction of growth centers.

The surgeon needs to be fully aware of the growth potentials of the individual. The following criteria are now being used to judge whether or not a palate should be closed surgically, and if so, at what age.[3]

1. Adequacy and vitality of tissue.

2. Spatial configuration of anatomic segments of the cleft, i.e., width and shape of cleft.

3. The relationship of the palate to contiguous anatomic structures in the pharynx.

When each patient has been evaluated in terms of the above considerations, it will be seen that there can be no hard and fast rule as to when to operate, when to use prosthesis, or when to use a combination of both. Each case must be judged separately and the final decision rests with the team and not with the surgeon alone.

DENTISTRY

Good general dental care is even more important for the cleft palate individual than for the average person. The successful use of a prosthetic device often depends upon the amount of retention which can be provided. Teeth should be cared for so that they do not become carious or the gums diseased.

The influence of the deciduous teeth upon the eruption of the permanent teeth and the consequent development of facial structures cannot be over-emphasized. The idea that the baby teeth did not need to be filled and retained as long as possible is no longer tenable. There is a direct relationship between the size and shape of the dental arch and the health of the baby teeth. Good habits of oral hygiene are a necessity for the cleft palate patient and must be instilled early and followed faithfully.

ORTHODONTIA

The orthodontist must have a thorough knowledge of growth factors and must know when and what types of appliances to use to achieve the maximal results in alignment of structures. He aids the surgeon or prosthodontist by retaining the parts in the desired position or by repositioning structures so that they can work more effectively.

Through orthodontia it is possible to restore teeth to their proper positions and to maintain them in their correct relationships. This usually results in a much im-

proved cosmetic effect. Also this straightening process often enables the child to achieve better speech. The contribution of the orthodontist to the team cannot be exaggerated.

PROSTHODONTIA

Prostheses and speech appliances were formerly viewed as a last resort after surgical failure. Then some workers developed the philosophy that prosthesis was the method of choice and that surgery should never be used.

It is now a generally accepted fact that surgery and prosthesis offer complementary procedures for the total rehabilitation of the cleft palate person. In cases where tissue is inadequate and a poor surgical result is an almost certainty an appliance may be indicated from the beginning. Sometimes the surgeon can repair the hard palate but is unable to construct a functional soft palate. Then a speech appliance can be used to improve articulation. Young children may be fitted with a training appliance until they have reached the optimal age for surgery.

The function of the prosthodontist is to supply missing parts and restore normal structural relationships wherever possible. When a person has a markedly underdeveloped maxilla and, as a result, a marked malocclusion, the prosthodontist can do much to improve appearance and function. A complete denture can be fashioned to fit over the patient's own teeth to fill out the lip contour and to establish normal occlusion. The cosmetic effect and the better dental health of the patient are material assets to his personality.

In cases where surgery is either not indicated or has been attempted and has not been successful, adequate velopharyngeal closure for speech can be achieved by a speech appliance. The speech bulb may be all the person needs or it may be part of a partial or full denture. In the latter case, the task of providing good retention will tax to the utmost the ingenuity of the prosthodontist.

SPEECH THERAPY

The speech therapist has several duties on the team. The most obvious one is the evaluation of the speech. In some cases, defective speech is due to causes other than the cleft and the therapist must be able to differentiate these factors. The degree of nasality on both vowels and consonants, the use of the tongue and lips, the substitutions of sounds must all be noted.

The therapist then must evaluate the structures in the light of speech. Is the velopharyngeal closure adequate? Are there barriers to good tongue movement, such as orthodontic appliances? All these points must be assessed so that the advisability of further surgery, further orthodontia or other procedures may be decided upon.

With a very young child who has not yet begun to talk, the speech therapist assumes the role of a counsellor to the parents. Ways in which to foster normal speech development and what to expect from the child in the way of speech attempts are discussed. As the child begins to talk the parents are given specific suggestions for working with him at home until formal speech therapy is indicated.

Depending upon the type of services available in the community, the speech therapist may do the actual therapy with the patients or only serve as a consultant on the team. Regardless of how it is managed, however, almost all cases, whether treated by surgery or prosthesis, will need some type of special training.

OTOLARYNGOLOGY

It has been shown repeatedly that children with cleft palates are more susceptible to respiratory infections than normal children. Also, more of these children have ear infections and accompanying hearing loss than others. This may be due to the greater number of infections which travel from the nasopharynx to the middle ear by way of the Eustachian tube. It is also possible that the cleft causes an abnormal functioning of the muscles responsible for the opening of the tubal orifice.

Any interference with the necessary aeration of the middle ear leads to serous otitis media, retracted ear drums, and other pathologies responsible for a conductive hearing loss. These children need careful periodic check-ups to reduce the incidence of middle ear pathology.

Since much middle ear involvement is caused by blockage of the Eustachian tube with hypertrophied lymphoid tissue, the otolaryngologist is faced with a problem in advising tonsillectomy and adenoidectomy. In many cases the velopharyngeal closure which provides adequate speech is achieved because the palate rests against a large pad of adenoid tissue on the back wall of the pharynx. Removal of this adenoid pad may cause serious consequences speechwise. The otolaryngologist must be in a position to evaluate all these factors and to know in which cases operation is clearly indicated, how much tissue to remove, and the possible consequences to speech.

SOCIAL SERVICE

The social worker is an indispensable member of the team, serving as a liaison between the team and the patient or his family. The social worker interprets to the patient the decisions as to the type of treatment, steps in the program, and other questions concerning the medical aspects.

The patient's problems as to finances, travel to obtain treatment, and other obstacles, can be worked out by consultation with other agencies in the community. The social worker can help to plan with the patient so that the proper scheduling of visits and the correct timing can be carried out with as little inconvenience as possible.

The social worker can also help the team to plan by informing them of the attitudes and feelings of the family and the ability of the patient to co-operate and carry out recommended procedures.

PSYCHOLOGY

In a total rehabilitation program for any patient, the mental and emotional factors are of vital importance. It is necessary to know the capacities of the person so that a realistic policy can be pursued. Sometimes a person, because of intellectual capacity, economic, social, or emotional influences, is incapable of sufficient co-operation to make a prosthetic device practical. Therefore, surgery may be a better choice for him, although structurally it is not the ideal one.

Delayed speech in children is not necessarily due to the cleft lip and/or palate per se. It may be caused by the traumatic emotional shock of early surgery and hospitalization, by feelings of guilt and rejection on the part of the parents, or by mental retardation, to mention only a few possibilities. A thorough investigation of all aspects by a trained clinical psychologist is invaluable in total rehabilitation.

The psychologist can be of value, not only in testing, but in counselling and guidance both with the patient and the family. A realistic, objective attitude to the handicap, an acceptance of the limitations of therapy, and a healthy emotional atmosphere can be as helpful as good surgery or a perfect appliance.

SUMMARY

The value of such a team approach will be shown by methods which produce better speech, less personality maladjustment, improved cosmetic effects, and more understanding and co-operation from the patient and his family. It also provides fruitful information for the research which is still needed to answer many of the questions concerning the etiology and treatment of cleft lip and/or cleft palate.

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HEMIPLEGIA FROM A BLACK WIDOW SPIDER BITE

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The bite of the black widow spider is a fairly frequent occurrence in the southern states, more often seen in rural areas

than in the metropolitan areas served by the usual university hospital. A minimum of scientific information is given the average medical student on the clinical syndrome produced by the bite and its treatment, probably due to the decreased incidence of bite in the metropolitan areas. Usually the doctor's first contact with the problem is as an intern or resident in a charity hospital when he is forced to call on his limited knowledge and skill to treat the unhappy victim.

The fact that these bites are not as innocuous as may be supposed is borne out by reports in the literature of at least 16 deaths in the United States.[1]

This paper is presented to record a case of black widow spider bite followed by partial hemiparesis, marked speech aphasia, bladder retention and stupor.

CASE HISTORY

A 37 year old white male was bitten on the dorsal surface of the left forearm on October 22, 1955, while gathering pecans in his pasture. The bite caused only a mild sting and the patient killed the spider and placed it in a pocket matchbox. In approximately twenty minutes he began to have deep, cramping-type pains in his left forearm, in the upper portion of the arm near the shoulder and, a few minutes later, in the substernal area. When the patient was seen approximately one hour and fifteen minutes after the bite he was still suffering the same pains, severe by this time, and also pain in the epigastrium of a constant cramping nature.

Physical examination was entirely negative except for a 4 by 4 cm. area of erythema at the site of the bite on the left forearm, and moderate abdominal rigidity without tenderness. He was immediately given 10 cc. of calcium gluconate, 10 per cent, intravenously, with no relief. He was given gr. 1/6 morphine and 30 mg. benadryl, intramuscularly. At the end of an hour the patient had vomited twice, was in severe pain, and was beginning to get mildly apprehensive. He was given more morphine, and 80 U ACTH gel i.m. Nausea and epigastric pain continued. For the next forty-eight hours the patient was never completely free of pain. He developed marked abdominal muscle rigidity but no tenderness. Bowel sounds remained normal throughout. He vomited even water, so infusions were necessary for this period. Calcium gluconate was given i.v. on four occasions, without benefit. The pulse remained from 40 to 60 per minute. By the third day the pain in the arm and chest had subsided, but generalized abdominal pain persisted and there was pain in the hips and thighs. At the end of the third day he was having difficulty voiding. The prostate was normal on examination, but extremely difficult urination continued for the next forty-eight hours.

By the fifth day the patient was feeling fairly well and complained only of pain in the ankles and feet. He was discharged. During this hospital stay he was always cooperative, alert, and at only one time during the first hours did he show apprehension. The spider, which he had brought to the hospital with him, was a source of curiosity to the nurses, orderlies and aides, and the patient was jovial and talkative during this time when he was not in too great pain. He received numerous injections of morphine and demerol and benadryl, but none seemed to give relief.

The first day the patient was home, his wife noticed him becoming progressively quiet and withdrawn. By night he appeared definitely confused, though he was cooperative and was oriented as to time and place. By bedtime he spoke only when spoken to, and answered questions and obeyed commands in an automatic fashion, showing a completely flat emotional response. By the next day, when he was brought to the office, he limped markedly, could walk only with help, and showed left facial weakness. General physical examination revealed a left facial muscle weakness, tongue deviation to the right, decreased pain sensation in the left face and extremities, and weakness of the left upper and lower extremities. Deep reflexes were hypoactive on the left, as was the cremasteric reflex. The umbilical reflex was negative bilaterally. Babinski and Hoffman were negative. Eyegrounds were negative, and pupils were equally dilated and not symmetrically round. They reacted sluggishly to light. Accommodation was normal. There was ecchymosis over the left face which his wife said developed while he was shaving. Rumpel-Leede test was negative. Spinal tap was as follows: Opening pressure, 18 cm.; normal dynamics; white cells, none; RBC, 4/cu.; protein, 46 mg.%; sugar, 92 mg.%; Wassermann, negative; colloidal gold, 000000000. The CBC, urinalysis, bleeding time, prothrombin time and platelet count were normal. Lee and White coagulation time, 9 min., 50 sec.

The patient was started on a slow drip of ACTH, 15 U to 500 cc. normal saline, and was given benadryl. He showed no restlessness and stated he had no pain when asked. He ate and drank when told, and slept during the night. Within twenty-four hours he was improved slightly but had developed difficulty with his speech. He at first could not think of words, and later stuttered profusely. After seventy-two hours he began to show emotional response and his facial paralysis had completely disappeared. The petechiae cleared within forty-eight hours. ACTH was continued after the first day in the form of gel. Blood pressure remained a normal

125/80 throughout both hospital stays. After one week the patient was well, with the exception of occasional stuttering. The muscle strength in his left extremities returned; his personality returned to normal; and he denied any unusual feelings. His wife stated he appeared to be perfectly all right. On questioning, he had complete amnesia of his return to the hospital, the spinal tap, examination, or any events for approximately a forty-eight hour span.

THE SPIDER

The female black widow *(Latrodectus mactans)* or hour-glass spider has a body one-half inch long and is identified by its jet black color and the very characteristic scarlet red "hour-glass" mark on its ventral surface. The male spider does not have the red mark and its bite is of no consequence. The habitat is from southern Canada to Chili, but it is found predominantly in the southern United States, Mexico, and Central America. The spider lives in dark, secluded corners, under woodpiles, under houses, or in dark, infrequently used closets. The spider is timid and will not bite unless endangered. Many times it has been accidentally found under lumber or trash where children have been playing daily for months. Bites usually occur when the victim inadvertently puts his hand or foot under the cover protecting the spider's hideout. Often the bites are on the male genitals, occasioned by spiders living on the underside of an outdoor privy seat.

The venom is a toxalbumin, proved to be a neurotoxin similar to the venom of the cobra. According to Faust [2] it is one-third as toxic as rattlesnake venom.

THE CLINICAL SYMPTOMS

The actual bite is only slightly painful and is described like the sting of a small bee. In fifteen to twenty minutes the patient notices mild swelling and redness in the area, and deep pain radiating up the extremity. This can be rapidly followed by precordial pain, weakness and, later, deep pain in the extremities and severe abdominal cramps simulating at times an acute abdomen. It can last from one hour to several days. It should be emphasized that the sting is sometimes of such minor nature that no connection will be made between the bite and the ensuing cramps. Many cases of prostration and shock have been reported; convulsions have been reported as common in children;[3] and one case of toxic myocarditis with definite EKG changes is recorded.[4] An unusual form characterized by extreme hypertension and albuminuria similar to eclampsia is reported and well authenticated.[3] A local skin reaction termed cutaneous arachnoiditis is reported in which there is a gangrenous slough of skin at the site of the bite.[5] Vague references are made in the literature to coma and neurological changes, but I have been able to find no reference to a transient hemiplegia as described in this case.

TREATMENT

Intravenous calcium gluconate or 2 cc. of 50 per cent magnesium sulphate are most often given as a successful treatment. This patient got no apparent relief from four such injections. Usually one gets thirty minutes to one hour relief from one injection. Neostigmine and phisostigmine are found by some to be satisfactory and by others to be useless.[6, 7] Curare has been proposed and tried with some relief of the severe muscle spasm and pain.[8]

A specific antivenin prepared from horse serum by Sharp & Dohme is reported by those that have used it to be extremely satisfactory,[9] giving complete relief in thirty minutes to one hour.

Narcotics and the usual analgesics have little effect on the symptoms. ACTH or cortisone is of questionable value.

SUMMARY

1. A case of black widow spider bite is presented which, in addition to showing the usual symptoms of extreme pain and muscular rigidity, developed a transient left hemiplegia and toxic psychosis.

2. Black widow spider bite syndrome and treatment are discussed.

3. Spider antivenin is apparently the most satisfactory treatment presently available and should be given when possible.

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THE USE OF RESERPINE IN THE TREATMENT OF DISTURBED GERIATRIC PATIENTS

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The medical profession today recognizes, but has not fully accepted the challenge presented in the care and the treatment of the geriatric patient. Death rates from the chronic, noninfectious, degenerative diseases have increased steadily in the last half century. Contrariwise, the chronic infectious disease death rate has decreased rapidly. This being the situation, the progressive increase in the number of geriatric patients in future years will be dependent upon the above trends and other factors which all point to longevity.

The problem is further complicated by the disinterest of the busy general practitioner in treating the chronic geriatric case, the tendency of families to reject their members who have grown old and useless, and also the shortage of beds in hospitals, psychiatric institutions, nursing homes, domiciliaries, and the lack of the intermediate type hospital where the elderly and ill patient may receive a type of medical service between that required by the acutely ill and that available in a domiciliary. It has been the all too prevalent policy of families and physicians to select a bed for the elderly patient, who is showing some signs of confusion, disorientation, and restlessness, in a psychiatric hospital. Nothing could be more unfair to the individual or to the psychiatric hospital. The senile, mildly confused and disoriented geriatric case needs excellent medical care and not rejection by society. After all, it has often been said that the geriatric patient is a walking medical museum. Therefore, he or she should be a challenge to the physician rather than just a "senile old fuddyduddy" to be rejected by the profession and society. Perhaps some of the most difficult problems confronting those treating geriatric patients; namely, the unrest, the agitation, the feeling of rejection, the mild to moderate confusion, the change in sleep pattern and even the psychotic behavior so often seen in the elderly, may be ameliorated with the advent of the new "tranquilizing" drugs. However, evaluation of these drugs is necessary so that the most efficacious medication can be chosen instead of the overrated, smartly advertised panacea.

At the present time 10 per cent of the Veterans Administration average daily hospital patient load consists of patients 65 years of age or over. Thus, with an average daily patient load of approximately 110,000, the Veterans Administration Hospitals have the care and treatment of approximately 11,000 geriatric cases. Five hundred eighty-four thousand veterans now are 65 years of age, but five years hence the number is expected to exceed 1,780,000. The Veterans Administration has a many-sided scientific attack in progress with relation to this problem. The attempt is being made to use all resources to give adequate care to this large group, not only from a medical, surgical and therapeutic viewpoint, but with sociological, economical and other factors considered. The social worker, the psychiatrist, the physical medicine department, the nurses, the hospital aides, all contribute to the therapeutic milieu. The social worker, for example, uses the accepted principle that these older patients respond better at home or in therapy centers near their homes, relatives and friends; hence, the family must be drawn into the picture again and given an under-

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standing of the patients' condition and the responsibility which they must reaccept for a member of their family.

Study and observations in the use of reserpine in geriatrics in this psychiatric hospital are not wholly on our own observations. It is only one phase of the various studies that are being done. The matter is being presented in the form of simple observations, special effort being made to circumvent excessive scientific and statistical data. The results obtained with patients in general practice and outpatient treatment may not be as dramatic as those experienced in the hospital where the environment is well controlled. Naturally, the more disturbed the patient, if he is to respond, the more noticeable will be the change. In general practice the physician must be alert to the patients with only early mental changes and extremely mild manifestations, representing the ideal time to institute therapy. General interest has been mainly in the use of reserpine in mild hypertension, anxiety, tension, and nervousness, while on our services it has been a matter of allaying the manifestations of moderate to severe phychotic reactions primarily in those patients having chronic brain syndromes. At this comparatively early date, the rediscovered alkaloids of serpentina rauwolfia have proved their value in the treatment of disturbed and tensive individuals regardless of age. The management of older patients with the use of reserpine is quite different from that of the younger age group, although this is mainly from the standpoint of dosage. The fact is made evident by practical application and observation on our services on the wards at this station. We have proceeded to place the more disturbed and confused patients on reserpine and gaining information by comparison with their past behavior and physical status. On a geriatric ward at the present time we have a group of 74 patients on the drug. Conclusions were obtained from an over-all picture, behavior in relation to the other patients, cooperation in regard to personnel, cleanliness, interest in daily habits, desire to take part in ward details, response to questioning, sleep, activity, eating habits, weight, etc. A very striking example, and there are numerous others, is the following case report:

CASE REPORT

The patient, a 55-year-old white man, was admitted to this hospital in 1935. The background prior to 1935 was obtained from Bay Pines, VA Hospital, in Florida, from where the patient was transferred. The patient had stated that in 1920 he was examined by a doctor and told he had syphilis. He received adequate antiluetic treatment then and subsequently, but in 1929 he began losing control of his feet and legs. This condition grew steadily worse. He remained in a wheelchair after his admission here. His last gainful occupation was in 1933.

After completed studies the staff was of the opinion that the active luetic process had "burned out." During hospitalization at VA Hospital, Gulfport, he underwent various phases; originally, he was so obstreperous that approachment was very diffciult. He was pugnacious, actively paranoid towards all personnel, particularly the ward female personnel. He would attempt to run down the aides with his wheelchair or strike at them if they were within reach. He became profane and abusive, presenting a major problem as to proper care since he was completely dependent upon the personnel for his daily needs.

After having been given reserpine 0.5 mg. b.i.d. for two weeks he showed improvement. This dosage was increased. Subsequently, his paranoid behavior underwent a complete change. He sat quietly in his chair and appeared to receive great satisfaction from the least attention given him by doctors, nurses and aides.

An interesting thing here is that the patient is a burned-out paretic. The question may arise, was the central nervous system lues the cause of his psychosis? It is possible there were other cerebral pathological processes during the twenty years of hospitalization that contributed to the continuing acute psychosis.

Again a typical example taken from the records: This patient was admitted to this station in 1936. He was transferred to the geriatric service from the most disturbed ward because he constantly irritated other patients on his ward and was a bit old for his antagonists. He was only 53 years old but considerably deteriorated and appeared to be about 60. He mumbled in a continuous incoherent manner. He was persistent in tearing all his clothes and destroyed from five to six suits of pajamas a day. His face, at times, was a kaleidoscope of colors from scratches and bruises; echymotic areas were visible evidence of his continuous altercations. A good physical examination was

impossible because of poor cooperation, but there was no gross evidence of pathology. The diagnosis, schizophrenia, hebephrenic type. The serology was negative.

Here is a subsequent progress note: "Two months ago this extremely disturbed individual was started on reserpine. He was given 0.5 mg. b.i.d. for one week, then increased to 1.5 mg. daily. Since receiving this medication his behavior has made a marked change, in fact, an unbelievable change. He is not restrained. He feeds himself, while previously he was spoon-fed. He smiles and attempts to talk. He repeats names, mops the floor, runs the polisher under supervision and even dances with the female worker from the special services and comports himself generally in a commendable fashion."

The patient for the past month has been receiving only 1 mg. reserpine, morning and night. Incidentally, this dosage is one of the largest being given on chronic services. In a matter of eight months this patient has gained forty-three pounds and, naturally, will soon present another problem.

DISCUSSION

Our experience has been that the dose of reserpine in the older patients need not be large. Some of the patients have shown improvement on as little as 0.12 mg. or 0.25 mg. two or three times daily, and being maintained on this dosage after having shown that a larger dose was unnecessary or brought about disturbing features such as drowsiness, excessive sleep or the reverse, insomnia, and, interestingly a decrease in weight. Some patients taking as little as 1 mg. above what is his optimal dose will promptly show a progressive weight loss after having gained weight on the drug before this optimal dose was exceeded. We have also found in some patients the best administration is a dosage spread, say 0.5 mg. three times a day rather than 1.5 mg. in one dose in the morning or at bedtime.

From the physical standpoint there also were some changes observed. Primarily, there is an apparent improvement in the state of well being with its component manifestations, friendliness, cooperation, happiness, etc., a minor decrease in blood pressure and increase in appetite and, very noticeable, an invariable increase in weight. Averages in this group have been worked out on 74 patients. The average age was 58. The average dose of reserpine used was 1.5 mg., the smallest being 0.125 mg. and the largest dose to one patient being 3 mg. The blood pressure decreased noticeably in 79 per cent of the patients. A good many of these showed a drop of 20 to 30 points systolic, one patient decreased 90 systolic and 30 diastolic and is now being maintained at 120/80 on 1 mg. at bedtime. Blood pressure actually increased in 9 per cent of the cases, and remained static in 12 per cent. Discontinuance of medication was obligated on 4 patients because of an excessively low blood pressure response. Sixty-eight per cent showed an increase in weight of anywhere from seven pounds to forty-three pounds, 20 per cent showing a decrease

TABLE 1

TEN SELECTED CASES OUT OF 74 TO ILLUSTRATE FINDINGS

Case	Age	Blood Pressure Before Rx	Blood Pressure After Rx	Weight Before Rx	Weight After Rx	Average Daily Dosage Reserpine	Improved *	Diagnosis
1. A. C.	55	124/80	110/64	127	182	(1) mg.	Yes	S. R., C.
2. S. D	54	120/90	108/52	111	121	(1) mg.	Yes	S. R., H.
3. J. F.	68	156/84	138/70	129	139	(1) mg.	Yes	S. R., H.
4. A. A.	57	114/70	86/36	144	137	(2) mg.	No	Post Lobotomy, S. R., H.
5. L. M.	64	130/80	108/66	119	115	(1) mg.	No	S. R., C.
6. M. S.	61	130/60	106/58	122	140	(1) mg.	Yes	Manic Dep.
7. T M.	73	172/68	120/70	138	140	.5 mg.	Yes	C. B. S., Arteriosclerosis
8. C. M.	69	120/70	106/50	108	123	.5 mg.	Yes	C. B. S.
9. J. A.	68	115/80	110/70	133	159	1.5 mg.	Yes	S. R., H.
10. Mc T.	54	160/80	124/76	160	144	(2) mg.	No	S. R., H.

* By improved we indicate both mental and/or physical betterment.

in weight. Twelve per cent remained static. Sixty-nine per cent of the patients showed improvement in either his physical or his mental status. Thirty-one per cent remained unchanged.

Important points to consider in the evaluation of the weight percentages are these: (1) Some of the patients were overweight when therapy was begun. (2) The obese patients and those gaining weight rapidly were placed on weight-reducing diets. (3) Some showed a weight loss before optimal dosage was obtained.

TABLE 2

	De-creased	No Change	In-creased	Overall Improve-ment	No Improve-ment
Weight	20%	12%	68%		
Blood Press.	79%	12%	9%		
Over-all Impr.				69%	
No Impr.					31%

CONCLUSIONS

Seventy-four disturbed, confused, psychotic patients were given reserpine. On the basis of the above observations we find a great majority of patients have benefitted by the use of the drug. The drug may be used without fear and hesitation in ambulatory cases, being careful to initiate treatment with a small dosage. We have experienced no severe untoward reactions except in the initial few patients where comparatively large doses were given. It was soon learned that small doses in the geriatric patient were very well tolerated. Each patient must be closely observed to obtain the optimal dose.

Constant nursing care has been considerably reduced, thus proving a boon for the problem of personnel shortage. The impression is that the use of reserpine in the simple degenerative process would obviate the need of hospitalization and many patients could remain at home with relatives and friends under the care of their family physician.

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PSYCHOTHERAPY BY THE GENERAL PRACTITIONER *

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A mixture of modesty and anxiety seems to inhibit many general practitioners from helping their patients with psychotherapeutic methods. The modesty no doubt arises from the wealth of literature on psychotherapy, much of which can give the impression of technical complexity. And physicians are naturally anxious in approaching something which they may feel beyond their competence. But these are unfortunate misunderstandings, because psychotherapy rests on a few simple principles which can be understood and applied by any physician who interests himself in the subject. Certainly it has technical refinements too, and some patients are best handled by psychiatrists and psychotherapists of greater experience. But the referral of these patients would still leave a great many others who can and should receive psychotherapy from their family physicians.

We know that many patients with both mild and serious mental disorders recover without any help from physicians. These so-called spontaneous cures are really not at all spontaneous. They are brought about because the vicissitudes of a patient's life bring him emotional experiences which either relieve his distress or press him into a different way of living. Now psychotherapy aims at providing such experiences for the patient in a somewhat more controlled manner than the hazards of ordinary life permit. The patient is relieved and also helped to change himself.

The patient comes to the physician full of distressing psychological and physical symptoms. These arise from his failure to obtain the satisfactions and security

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which we all need in life. This failure is largely or entirely due to the patient's own behavior. However, in the misery of his suffering the patient cannot see this. But as he talks to the physician, he begins to experience some relief from his acute distress. This relief in turn permits the patient to examine and alter his own concontribution to his distress. Then, by gradually changing his attitudes towards himself and other persons, the patient fashions for himself a life situation capable of satisfying his basic needs. Thus he finally rids himself of the sources of his distress. How does the physician act to bring this about?

The work of psychotherapy is mainly accomplished by the patient's talking. Nearly all the efforts of the physician are directed towards facilitating the patient's expression of his feelings, thoughts, and desires. Now the patient wants to say these things, but he also doubts the wisdom of doing so. Past experiences have persuaded him that it is often dangerous to give his confidence to someone else. And so he wavers, half pushed to talk, half pulled to remain silent. And which pressure prevails will depend upon the ability of the person to whom he is talking to make it seem safe and helpful to talk.

So the physician must first be a good listener. He must learn to be silent when the patient is talking and to speak chiefly to encourage the patient's talking or to help him focus on topics of major importance. Usually the patient will provide that focus himself. If he is psychologically distressed he wants to talk and, although he may hesitate or evade for a time, he will nearly always come to the important matters if permitted to do so by the physician. What these matters are is rarely known by the physician ahead of time. If he selects topics for the patient's discussion he may only get in the patient's way. It is better for the physician to spend more time and allow the patient to reach the significant topics at his own pace than to deflect him away from a subject towards which he is slowly and tentatively moving. In short, the physician must not project his own ideas into the discussion. He must try to listen to the patient as a unique individual for whom certain experiences have had important meanings. These experiences may not be important to the physician as a person, but they have been important to the patient and he needs to talk about them. And the physician needs to listen to them with respect for their importance to the patient.

The patient quite rightfully will not talk to anyone who does not so listen. I said before that the patient's talking does the work of psychotherapy. But he must be talking to somebody who finds what he is saying significant. And this can only be someone who finds him significant as a person. That is, he will only talk to someone who treats him with respect and consideration. The physician must accept the patient as a worthwhile person, although this does not mean he must approve of everything the patient does or says. He must be able to feel and communicate affection for the patient. And he must purge himself of any idea that psychological disorders are somehow "bad" or disreputable, or even not disorders at all. There is no need to emphasize this point since no physician will undertake psychotherapy unless he first believes it a worthy aid to valuable fellow human beings.

But there is need to emphasize the importance of the physician's attitude towards the patient. Perhaps the most important single principle of psychology is the fact that people, whether children or adults, tend to develop qualities which are attributed to them by others. If the physician treats a patient like a child, the childishness in the patient will tend to increase. If, on the other hand, the physician addresses himself to the maturer side of the patient and treats him as if he were mature, the childishness will tend to diminish as the patient unconsciously tries to fill the role which is

assigned to him.

Given then a patient who wants to talk to a physician who has shown himself the kind of person worth talking to, how does the talking help? In many different ways and perhaps in some ways we do not even understand yet.

In the first place, talking nearly always clarifies a subject. To put a problem into words immediately brings some order into it. So long as the problem can wander loosely in the patient's mind, it may attach to itself all manner of unrealistic associated ideas, most of them laden with anxiety. But when the problem is led out of the dark mental recesses and paraded before the scrutiny of another person, a change occurs. At the very moment when the patient presents his problem to the physician, he finds himself obliged to edit it. This item is deleted, that modified, and a third amplified in order to adapt it to the seeming expectations of the listener. As this process goes on, the patient usually becomes aware of the editorial work. In short, he realizes that things are not what they seemed to be because he could not tell someone else what he thought they were. And consequently, he becomes aware of some of his distortions and achieves a new objectivity. All this can take place if the physician simply listens silently. But the effect can be enhanced if the physician also applies the scissors and the blue pencil to the copy as it comes out. Questions pointed gently here and there can greatly increase the patient's growing objectivity towards his difficulties.

But as the patient talks about his difficulties, much more goes on than a merely verbal clarification. When the patient tells his story, he relives the past events which he relates. And reliving them, he re-experiences the emotions he then felt. Often when these events occurred, the patient was unable to express himself fully and adequately. As mentioned before, from still earlier experiences he had learned the dangers of expressing himself and so he had come to inhibit the exposure of certain thoughts and feelings. The inhibited thoughts and feelings are commonly sexual or aggressive ones, but may be of other kinds.. For example, many patients inhibit the expression of affectionate and tender feelings. Now, in the doctor's office, the patient is encouraged to talk freely. He is encouraged in this not so much by the doctor's verbal encouragement to go ahead as by the doctor's manner which tells him it is safe to go ahead. Thus the patient gradually learns that he can talk freely without danger of criticism or rejection. So he does so and in doing so, first unloads much tension which had been bound with the previously inhibited emotions. But in addition, he finds that, after all, these hidden thoughts and feelings are not so dangerous as he had believed. He had condemned himself for these thoughts and believed others did so also. But the doctor does not. The doctor does not become shocked, angry or frightened by what the patient says. This immediately increases the patient's opinion of himself and also his ability to talk freely to other people. Thus he begins to communicate his thoughts and feelings to other persons. He begins to tell them his desires and his anxieties. Thus he can draw closer to them and gain from them the support, affection and satisfaction which everyone needs in life. (Figure 1 illustrates this aspect of psychotherapy.)

But this is not all. As the patient talks about his experiences ranging over the past and present, he and the physician may begin to see certain patterns emerging. The physician may notice that the patient behaves in a similar way towards quite different people. Thus the patient may make it clear that he expects a great deal of attention from his wife. The physician may observe that the patient also expects much attention from him. The patient may make unnecessary calls at night, request unnecessary home visits, and demand various special favors. And both of these attitudes towards the wife and physician are themselves repetitions

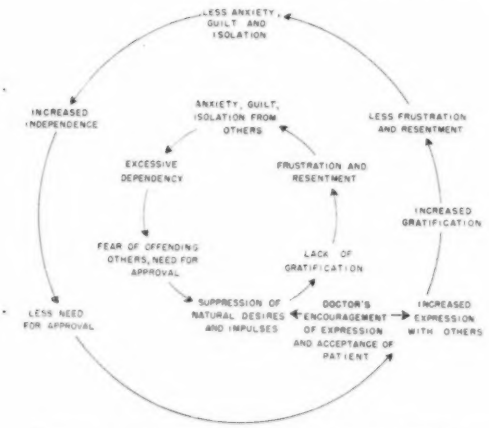
LESS ANXIETY, GUILT, AND ISOLATION
INCREASED INDEPENDENCE
ANXIETY, GUILT, ISOLATION FROM OTHERS
LESS FRUSTRATION AND RESENTMENT
EXCESSIVE DEPENDENCY
FRUSTRATION AND RESENTMENT
INCREASED GRATIFICATION
FEAR OF OFFENDING OTHERS, NEED FOR APPROVAL
LACK OF GRATIFICATION
LESS NEED FOR APPROVAL
SUPPRESSION OF NATURAL DESIRES AND IMPULSES
DOCTOR'S ENCOURAGEMENT OF EXPRESSION AND ACCEPTANCE OF PATIENT
INCREASED EXPRESSION WITH OTHERS

Figure 1. Illustrating how the patient's expression of feelings to the doctor may prepare him to express his feelings constructively with other people.

of earlier, never outgrown attitudes towards the patient's mother from whom he obtained and expected gratification of his every wish.

Sometimes the patient can and will notice these patterns for himself and set about modifying them. More often, they must be pointed out to him. This the physician does gently and perhaps most easily in the form of questions. He may ask, for example, "Do you feel towards your boss the way you felt towards your father?" or "Have you noticed any connection between the way you handle your wife and your feelings towards your mother?" Such queries may not be welcomed enthusiastically by the patient, but they will usually start him thinking about the questions raised. Once he begins to see such patterns in his own behavior, he begins to see how he himself has contributed to the difficulties in which he finds himself. This will contrast with his previous conviction that these difficulties resulted from the hostile or inconsiderate behavior of those around him. The insight may not be pleasant at first, but once grasped, it always brings a sense of increased power. The patient finds that he can do something about his part in events. When he realizes the importance of his own contribution to his destiny, he begins to alter his behavior which he would never do so long as he saw himself only as the helpless victim of other, more powerful persons. Thus, the patient's awareness of his responsibility for his life situation increases both his sense of power over his life situation and also his motivation to change himself and his situation.

In his efforts to change himself the patient obtains encouragement from the physician who endorses constructive changes in the patient's behavior. The physician can frequently enhance these changes by noticing with the patient those changes which have brought him new satisfactions. This can be done without making the patient feel that he must do certain things to placate the physician or win his approval. The physician accepts the patient whatever he does, but he can certainly feel and show pleasure in the patient's moves towards more constructive living. And this can provide necessary support for the patient as he at first tentatively tries new patterns of behavior and enters new experiences.

Such a psychotherapy as that outlined may seem so simple as to make one think it can be done by anyone, say a member of the family or a friend. And of course the best of friends do act in just this way for all of us. But obstacles stand in the way of friends and relatives when they try to help patients with psychological problems. These obstacles are not present or can be controlled when the patient consults a physician.

For example, when the patient talks to a relative or friend, the person he talks to is likely to be embroiled in the same situation as the patient. He therefore has a vested interest in what the patient does. Consequently, his remarks are likely to be influenced by his own needs in the situation. The friend or relative who is himself emotionally involved may struggle, but unsuccessfully, against the temptation to offer the patient advice. Now advice can have its place in life, but it rarely, if ever, leads to psychological growth.

Moreover, persons who are likely to need psychotherapy have usually suffered from a surfeit of advice or at least from the conviction that they must do what others tell them. They almost invariably need experience in making their own decisions and accepting responsibility for these. But they also need the opportunity of talking in an atmosphere unclouded by the emotional pressure of other persons.

The physician can provide this atmosphere. He is not himself emotionally involved in the patient's dilemma and can therefore listen more or less objectively. I say more or less because the physician will find this much more difficult than he at first imagines it to be. He also will have to struggle against temptations to interject his own ideas and to offer advice. He must try to help the patient find out what will be best for the patient rather than what would suit the physician. But being more detached from the immediate situation, the physician can nearly always succeed in this task when the patient's friends and relatives are likely to fail.

And in another important respect also the physician can improve on what friends and relatives may offer. He can forebear from premature reassurance. Because they are attached to the patient, relatives and friends do not like to see him suffer. Or his fears, angers and depressions may induce similar distress in themselves, and they do not like to see themselves suffer. In either case they can, or think they can, interrupt the suffering in the patient or themselves by covering up the patient's anxieties with a thick layer of reassurance. They tell the patient that things are not as bad as they seem, that he should be patient, or must buck up, and so on. Now such comments, when delivered earnestly enough may offer some support or passing relief to the patient. But they nearly always have the additional effect of shutting up the patient's expression of his feelings. This may be what the friends and relatives wish. But it is no solution to the patient's deep need to express just those feelings which are being thus bottled up. The physician on the other hand, and again because he is somewhat removed from the situation, can bear to listen to the patient. He can hear him out fully without having to cut him off. Certainly, the physician's anxieties also may be aroused by what the patient says, but interference from these anxieties can be reduced if the physician remembers the importance of permitting full expression to the patient. Reassurance the patient may need and should receive at times. But it should be given only after he has been heard to the end of any subject. Reassurance should be applied for the comfort of the patient, not to reduce the discomfort of the physician.

I have said little about interpretations and deliberately so. I believe that effective psychotherapy using the principles outlined can be practiced with few or no interpretations. Furthermore, even in the most expert psychotherapy, the most moving interpretations are those which the patient discovers for himself, albeit with the guidance of the physician. Physicians are sometimes held back from practicing psychotherapy because of mistaken fears that they may apply too many or too few interpretations. This is unfortunate and seems to me to miss the essence of all psychotherapy. And this is that the physician provides for the patient an experience in which he can express himself and study himself. And while he is doing these things, he discovers and tests new ways of relating to people and of solving problems. This experience is initiated and continued by the anxiety and distress of of the patient who wants to feel better and live better. But the process of recovery is advanced by the contribution of the physician which is chiefly his respect and affection for the patient and his conviction that the patient can reach better solutions to his difficulties.

However, although the process goes on within the patient and is driven by motives within him, the contribution of the physician provides the additional force

which sustains and advances the recovery. And it has been my theme in this paper that this contribution of the physician lies chiefly in his constructive attitude towards the patient, namely in his respect and affection for him. Such respect and affection the patient may not have met often, or even ever before. Thus talking to the physician provides a new experience for the patient, corrective of older, less happy experiences. And from this new experience the patient can then move towards newer and happier experiences with other people.

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A SIMPLE ARTIFICIAL HEART-LUNG; AN APPROACH TO OPEN HEART SURGERY. PRELIMINARY REPORT

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INTRODUCTION

An adequate artificial heart-lung or pump oxygenator must temporarily substitute for the heart and lungs. It should satisfy these criteria:

1. Circulate the blood effectively and safely.
2. Add sufficient oxygen to the blood.
3. Eliminate proper quantities of CO_2.
4. Cause minimal destruction of formed elements of the blood.
5. Not disturb clotting mechanism.
6. Not deliver gas or other emboli.

DESCRIPTION

The simple all plastic unit herein described fulfils these criteria. It is a single unit, as diagrammed (Figure 1), extending from the venous canula around to the arterial canula. It consists of a tubular ascending (venous) limb, into which enters the venous blood and the oxygen inlet tube, and a funnel shaped descending (arterial) limb, from which exits the arterial tube. The venous tube opens into the ascending limb; the oxygen inlet tube projects about 30 cms. up into the ascending limb. This tube has about 1000 pinholes, and the end is sealed. In operation, this allows tiny oxygen bubbles to grow on the outside of this tube. A trough along the wall of the descending funnel prevents channeling of blood directly into the outflow tube. A large fine mesh nylon filter slants across the funnel. Aspirated coronary sinus flow enters independently, near the apex of the apparatus. The walls of the apparatus have been impregnated with silicone "anti-foam",* which adequately controls foam formation. Blood from both vena cavae is pumped † into the ascending limb where it is mixed with oxygen directly from a tank. A sharp color change can readily be seen in the blood in the ascending limb, and is maintained in the lower half by regulating oxygen flow. Sufficient CO_2 is swept out by this flow of oxygen. Gases escape at the open end of the apparatus. Arterialized blood from the reservoir returns to the arterial system by gravity, at a pressure regulated by the height of bag. Heparin is used as an anticoagulant, and protamine is given at the end of the procedure.

ADVANTAGES

The advantages of this simple artificial heart-lung apparatus are several. The apparatus is a single unit of polyvinyl chloride, which can be wrapped and autoclaved. It is inexpensive and disposable. The use of a single pump on the venous side obviates the need of synchronized pumps. All available blood is removed from both vena cavae and delivered to the reservoir. The total volume of the system is then primarily the volume in the animal plus the volume in the reservoir. By elevating the bag and increasing the arterial pressure, more of this total blood is in the animal and the volume in the reservoir can be seen to fall. This fall lowers the pressure and reverses the process, acting

* Dow-Corning Silicone Antifoam A.

† Any one of several pumping devices that "milk" blood through a piece of tubing may be used. At present we are using a "Sigmamotor Pump", made by Sigmamotor, Inc., 3 N. Main St., Middleport, N. Y.

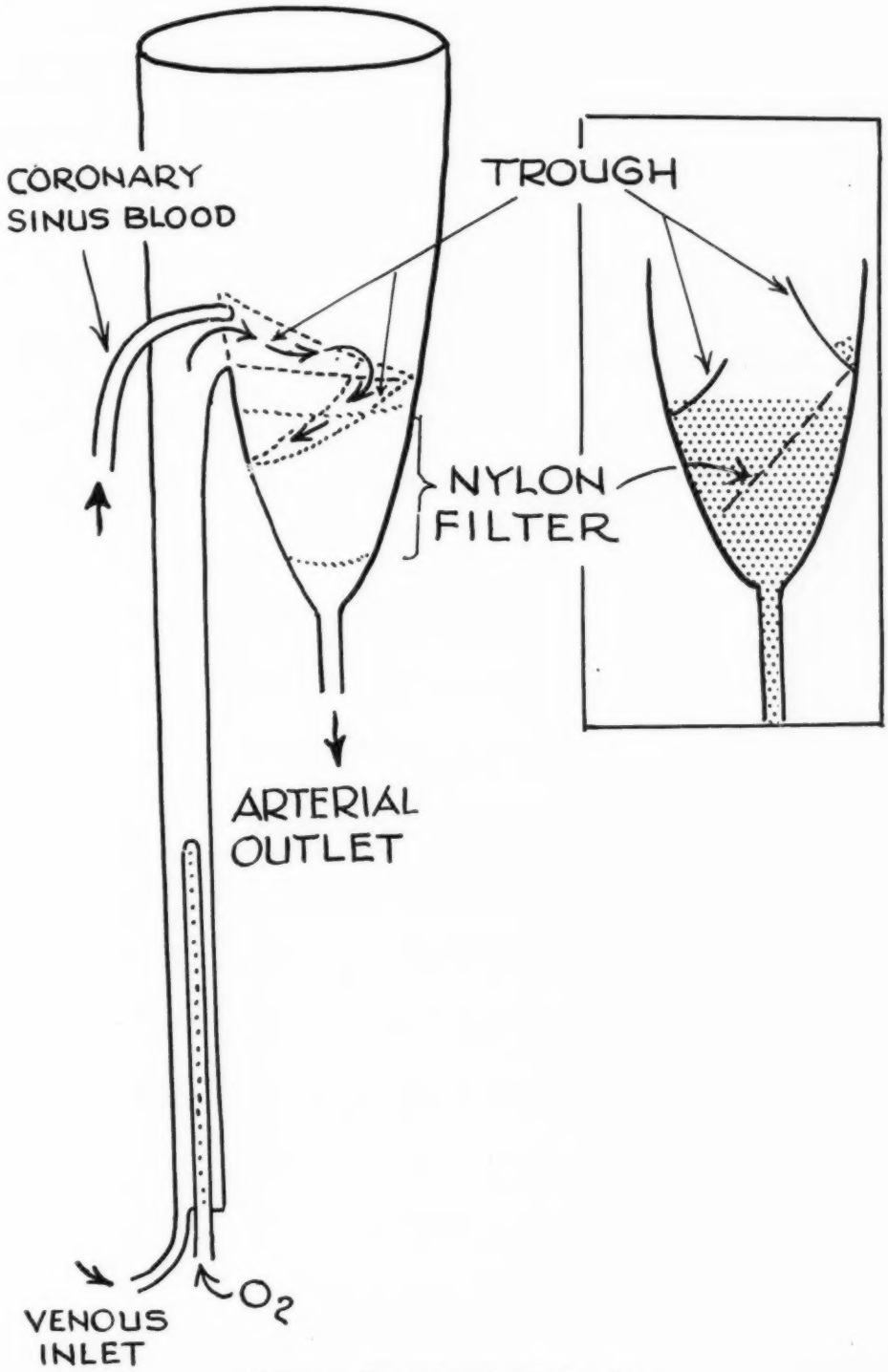

Figure 1. Side view and sagittal section.

as a servo mechanism.

The effectiveness of vena cavae collapse is easily controlled by the thickness of the portion of the tubing in actual contact with the fingers of the pump. The choice of thicker tubing or lowering the pump produces greater suction. No changes are necessary in the speed of the pumping device.

The plastic is clear and all changes, such as color changes of the blood and levels of the reservoir, are readily visible at all times. This permits safe use of this apparatus without the need for instrument monitoring or laboratory control. There are no moving parts. The oxygen is dispersed through at least 1000 holes so that it exudes slowly with no jets. This minimizes blood destruction and obviates tiny O_2 bubbles. There is no physically free anti-foam oil.

RESULTS

Using this apparatus, 11 consecutive dogs have been subjected to total cardiopulmonary by-pass with effective maintenance of circulation for periods of thirty to sixty minutes. During this time, the right atrium has been opened, the coronary sinus flow has been adequately drained by catheter, and a nearly completely dry atrium obtained. There have been no deaths and no apparent morbidity.

The pertinent data on a typical experiment is indicated in Figure 2. The blood pressure has been maintained at levels between 50 and 120 mm. of mercury. The flow rate has varied from 500 to 1000 or more c.c./min. The arterial blood is 100 per cent saturated and the arterial CO_2 is normal or slightly low. The arterial *p*H at the end of the by-pass procedure has varied from 7.29 to 7.36. There is a slight increase in the plasma hemaglobin and some fall in platelets at the end of the procedure. The white blood cell count does not change significantly and a slight fall in the red blood cell count can probably be explained by the fluids added.

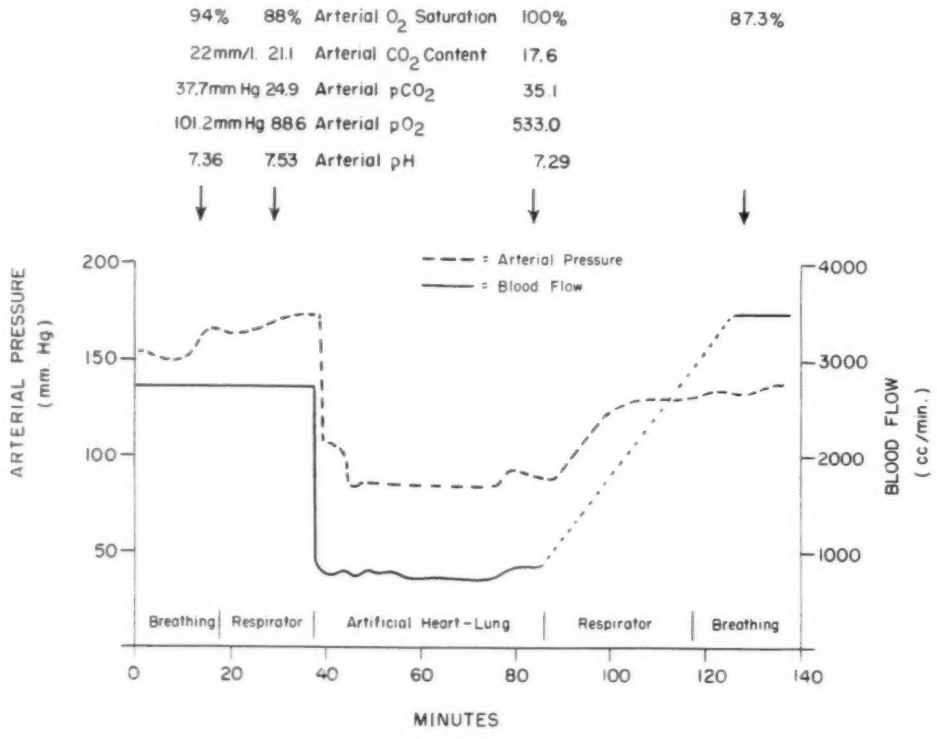

Figure 2

SUMMARY

1. A simple, disposable, all plastic artificial heart-lung apparatus is described. It employs only one pump on the venous side, contains no moving parts, and delivers arterial blood by gravity.

2. The apparatus has been safely used without necessity of instrument or laboratory monitoring.

3. Total cardiopulmonary by-pass for periods of thirty to sixty minutes has been performed on 11 consecutive dogs without mortality or apparent morbidity.

Note: This work has been supported in part by funds from the Louisiana Heart Association and the Edward G. Schleider Foundation, New Orleans.

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LONG RANGE COMPLICATIONS OF POORLY CONTROLLED DIABETES *

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Following the discovery of insulin in 1922 the death rate in diabetes dropped rapidly. According to Joslin and coworkers,[1] the death rate for diabetic coma was reduced from 63.8 per cent prior to 1914 to 3.1 per cent between 1944 and 1952. (They regarded even this low figure as evidence of deplorable ignorance or suicidal neglect by patients). However, one's satisfaction with this triumph is tempered by present statistics, which give melancholy evidence that diabetic patients face another threat from such serious degenerative pathologic processes as premature arteriosclerosis, diabetic retinopathy, diabetic neuritis, and glomerular renal lesions. These cripple and kill an appallingly high percentage of patients of any age whose diabetes is of more than ten years' duration.

This paper proposes to examine the contention that such devastation is preventable in direct proportion to the degree of perfection attained in the control of diabetes. The long range complications to be considered are (a) premature arteriosclerosis, especially when it attacks coronary and cerebral arteries and those of the lower extremities, and (b) "diabetic triopathy," as Root and coworkers[2] termed the triad of degenerative lesions, diabetic neuropathy, diabetic retinitis and diabetic nephropathy (intercapillary glomerulosclerosis or Kimmelsteil-Wilson syndrome). These degenerative processes usually occur together.

Before the etiology and symptomatology of these complications are considered, it might be best to examine their incidence in patients of various ages who have had diabetes for varying periods of time. An attempt will be made to compare the incidence with the degree of control of diabetes. In this regard one's personal experience or a small series of cases can be misleading. Most of us have encountered an occasional patient with diabetes who has few or no complaints, has completely disregarded the rules of good diabetic care for ten to twenty years and has practically no signs of degenerative disease. Contrast this vivid picture with the many diabetic patients, miserable at an early age because of angina, failing vision, intermittent claudication, and perhaps edema from advanced renal disease. Since these patients may have superficially, at least, seemed to have taken "good" care of themselves, it seems probable that the appearance of degenerative lesions is governed by predisposition, genetic factors or obscure factors that seem impossible to control and make it seem hardly worth while to attempt precise diabetic control. Indeed, many physicians have adopted this attitude and advocate the "free diet" management of diabetes.[3-5] However, it would seem wiser to examine the evidence more closely before accepting this gloomy conclusion.

The picture obtained from examination of a fair number of recorded statistics is not good, but it has some bright aspects, and perhaps some hopeful conclusions can

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† From the Department of Medicine, Ochsner Clinic, New Orleans.

be drawn, even though they must remain tentative at this stage of our experience. Life expectancy tables provides a good starting point. Joslin and associates[1] recorded the following statistics based on more than 8000 diabetic histories: at 10 years of age the life expectancy of non-diabetic persons is 57 more years as contrasted with 40 for the diabetic patient; at the age of 20 years the respective figures are 48 and 33; at 30 years, 39 and 28; and at 40 years, 31 and 21; whereas for decades past the fifth, the lessened life expectancy in the diabetic groups averages only 5 years, the difference lessening sharply in the older groups.

Clinicians who have been able to accumulate sufficient data on a number of patients followed long enough to obtain valid information have found important differences between various groups of patients. Wilson, Root and Marble[3] who evaluated the experience of Joslin and associates, reported 247 cases of diabetes in which the age of onset ranged from 1 1/12 to 30 years and the duration from ten to thirty-four years. They studied these cases for evidence of degenerative lesions of the kidneys, retinas, and blood vessels, correlating this with the degree of control of the diabetes. Their evaluation of degree of control was more minute than that of most other reports, and perhaps that is the reason some encouraging facts were gleaned from rather depressing statistics. Their evaluation and classification of control may be summarized as follows.

There were 7 patients (2.8 per cent) with excellent control. The criteria for this group were that they weighed their diet 80 per cent of the time, tested the urine before meals two or more times a day and usually found it sugar free, never had diabetic coma, and had regular physical examinations and blood tests with blood sugar usually in satisfactory range. Thirty patients (12.1 per cent) were classified as having good control. This meant that they tested their urine once a day, weighed their diet for two months and later carefully measured it, and the other criteria were the same as for excellent control. There were 51 patients (20.7 per cent) with fair control. They tested the urine once a week, "conscientiously followed" their diet but did not weigh it and had coma rarely and perhaps it was "unavoidable." All other patients were considered to have poor control. This ranged from anything worse than the previous criteria to gross neglect. There were 159 (64.4 per cent) in this group.

Patients were studied for (1) roentgenographic demonstration of calcium in the vessels; (2) retinitis and (3) nephropathy-albuminuria with or without hypertension. They found that about 65 per cent of patients with fair or poor control for twenty years had some severe degenerative lesion. Only one patient with excellent control had any degenerative disease (mild retinitis), and only 17 per cent of patients with good control had some type of retinitis as contrasted with 60 per cent in the group with fair and poor control.

Other clinicians have reported comparable data indicating that the poorer the control of the diabetes the greater the evidence of serious complications.[6, 7] For example, Engleson[8] reported that of 217 adult and 42 juvenile diabetic patients treated by a free diet for over ten years, only 7 had no vascular complications. In those whose diabetes appeared before 40 years of age, nephropathy was present in 63 per cent, retinopathy in 60 per cent and hypertension in 65 per cent. Even though the criteria for control in most reports are not as specific as those of Joslin and associates,[1] significant differences have been recorded in the incidence of complications among those with reasonably good control and those with poor control.

Those who contend that degenerative complications are unrelated to the degree of control of the blood sugar report that the incidence of complications in patients treated by the "free diet" really compares favorably with reports of opposing views. However, they compare the incidence of complications in their patients with that

in the total number of patients, grouping together patients with excellent and good control and those with fair and poor control. Since the groups with excellent and good control in most series comprise only 12 to 15 per cent of the total, they influence the total statistics little and their significance is lost.

What is really being argued by those advocating "free diet" control of diabetes is that diabetes mellitus may be thought of as comprising two distinct manifestations developing at different rates of speed, that is, (1) insulin deficiency leading to classical symptoms of diabetes and (2) unknown mechanisms leading to accelerated vascular damage.[9] It is contended that the etiologic factors are probably genetic and inherited as recessive genes. This theory is by no means proved and there is much evidence against it, as I have tried to show. This is not to deny the overwhelming evidence of the hereditary nature of diabetes mellitus but rather to demand more proof that the vascular complications are an inevitable accompaniment, for although hereditary factors may well be operative here, it seems more likely that they are not necessarily carried by the same genes that produce the diabetes. Moreover, biochemical abnormalities of poorly controlled diabetes may well be the most important factors in producing vascular damage.

This brings us to a brief and, of necessity, superficial examination of some of the clinical and experimental facts and theories of the causes of the degenerative complications. The biochemical and biophysical abnormalities that have been described as etiologic agents, or indices of as yet unknown etiologic factors, in arteriosclerosis include hypercholesterolemia, elevated levels of total lipids, elevated chylomicron levels, increased capillary fragility and elevated levels of macromolecular phospholipids as measured by the ultracentrifuge technics of Gofman. When these disturbances are measured in diabetic subjects, they are found in an extremely high percentage, and the poorer the control the greater is the magnitude of these deviations. In animals made diabetic by pancreatectomy or alloxan, researchers are finding from observations over a prolonged period that those animals with persistent hyperglycemia eventually show severe arteriosclerosis comparable with that found in human beings, whereas controls with nearly normal sugar levels show little or no arteriosclerotic changes.

The basic pathologic process in the "triopathy of diabetes" is a vascular disturbance probably originating in the capillary walls. The initial lesion in both diabetic retinopathy and intercapillary glomerulosclerosis is the capillary microaneurysm.[10] The weakening of the capillary wall which produces the aneurysm seems to occur at the same time or perhaps to be preceded by changes in capillary wall permeability. This causes leakage of protein material seen as exudates in diabetic retinitis and foreign material (probably also protein) deposition outside the glomerular capillary wall in diabetic nephropathy. This can be produced experimentally in alloxon diabetic rabbits and other animals given large doses of corticotropin (ACTH) or cortisone.[11] That this might be an important factor in human beings is suggested by other studies in diabetic patients during a period of inadequate control yet who do not have acidosis. It was noted that these patients excreted (and presumably were producing) much higher amounts of cortisone-like steroids (formaldehydogenic steroids) than they did during periods of adequate control of the diabetes.[12]

The effect of hyperglycemia of moderate levels (comparable with that seen in patients with only fair or poor control) has not received as much study as the secondarily disturbed lipid metabolism it produces, and it is obviously difficult to isolate the effect of one from the other. However, blood sugar values higher than normal are probably not entirely benign, especially to cellular metabolism. New attention is being paid to the problem of the fate of the ground substances of tis-

sues—the intercellular matrices and cell walls, where serious disturbances in permeability can easily occur. The earliest detectable changes in experimentally produced atheroma in rabbits are alterations in ground substances.[13] Pathologists have noted these changes in ground substance in diabetic persons.[14] Since ground substances are complex mucopolysaccharides, it would be most surprising if chronically abnormal glucose levels would not disturb their integrity. Researchers and clinicians dealing with these knotty problems are beginning to hazard guesses that here lies a fundamental problem that might show the common denominator of the various vascular disturbances that affect the diabetic patient.[15]

There is strong evidence that the biophysical and biochemical disturbances of diabetes, probably working along with genetic factors, cause or accelerate the degenerative complications of diabetes. The implication is that preventing or minimizing these disturbances should be the goal in the treatment of diabetes. Attainment of "perfect" control with no deviation of the blood sugar from normal range is patently impossible. In view of the consequences, however, the patient and his physician should try to attain the degree of control described earlier as "excellent." This would involve following a number of recognized principles of diabetic care.

Diet — The caloric value of the diet should maintain body weight at or slightly below normal. The diet should contain 90 to 120 Gm. of protein, 200 Gm. or more of carbohydrate and sufficient fat to make the diet palatable and contain adequate calories. With our present knowledge, pronounced restriction of fat in an attempt to delay development of arteriosclerosis would seem justified only in patients with definite evidence of serious arteriosclerotic disease. It is difficult to adhere to diets with fat content of only 50 Gm. because they are not palatable to the average American. Measurement of the diet must be accurate; this is probably best done by weighing for several months. Several conferences with the dietician are usually necessary before patients get a clear understanding of their diet.

Insulin — Type and dosage of insulin must be determined by trial and error. The goal is fasting and preprandial blood sugar values as nearly normal as possible, without undue risk of hypoglycemia.

Urine Tests—For optimum care fresh urine specimens should be checked before each meal and at bedtime and recorded daily with the aim of adjusting the insulin dosage to maintain sugar-free urine.

Blood Sugar Tests — The only way to achieve this goal is to perform fasting glucose tests as well as spot checks before midday and evening meals. The ideal is nearly normal blood sugar values before midday and evening meals if they can be maintained without producing hypoglycemia.

Checkups—At least once yearly a complete physical examination should be done. In addition, other examinations and conferences with the physician are indicated as circumstances dictate.

Obviously, many factors can prevent this desirable degree of perfection in the control of diabetes. Limited intelligence of the patient, unfavorable psychic factors or the type of diabetes that fluctuates wildly without obvious reason ("brittle" diabetes) may conspire to limit what can be done. However, it is the physician's obligation to see that it is not lack of proper instruction and supervision that keeps the diabetic patient from attaining the best possible control.

Detailed discussion of the treatment of the degenerative complications will not be attempted. The many approaches that have been advocated, including parenteral vitamin therapy, special low fat diets, use of lipotropic agents, small doses of heparin, intra-arterial injections of histamine and even such radical procedures as removal of pituitary or adrenal glands, are evidence that there is no completely satisfactory treatment. Nonetheless, several

points should be made. First, meticulous control of the diabetes is probably the most important single therapeutic weapon to retard progress of the degenerative complications or even reverse the early changes. Secondly, the physician should strive for recognition of the earliest signs of degenerative changes in the diabetic patient, for at this stage there seems to be a real chance, with precise diabetic control, to reverse the processes or at least arrest their progress so that they do not cripple or threaten early death. Capillary fragility can probably be detected earliest by fundoscopic examination, as the small red dots are capillary micro-aneurysms, whereas actual hemorrhages and exudates suggest a more advanced process. Easy bruising is another early sign. The circulation of the feet should be carefully checked with search for excessive rubor on dependency or slight edema; actual disappearance or great diminution of pulsation in the dorsalis pedis or posterior tibial arteries indicate more advanced changes. Roentgenographic evidence of calcification of the vessels of the leg and foot might be obtained. Because diabetic neuritis is most often the earliest degenerative change to appear, patients should be questioned about numbness or paresthesias, especially in the legs and feet, and unexplained diarrhea or constipation. Another early sign might be great decrease of vibratory sense. Urine should be examined for traces of albumin or abnormal amounts of red cells and casts in the sediment, for diabetic nephropathy becomes symptomatic only when it is hopelessly advanced. In the presence of any of these indications of degenerative complications of diabetes, the diabetic regimen must be carefully reappraised and plans made to improve it whenever possible. Their significance should be explained to the patient and his responsibility in attaining optimum control clearly indicated.

SUMMARY

There is convincing evidence that the degenerative complications associated with diabetes, including premature arteriosclerosis, retinitis, neuritis and intercapillary glomerulosclerosis, are, to a large extent, caused by biochemical and biophysical abnormalities resulting from poor control of the disturbed glucose and lipid metabolism of diabetes. Clinical observations show that the incidence of these complications is appreciably lower in the patient who has best controlled his diabetes. Our responsibility as physicians is to teach our patients the advantages of maintaining this degree of control and helping them get the incentive and skill to carry it out.

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TAXATION IN LOUISIANA

Taxes have risen in Louisiana, as in all other parts of the United States, in the last thirty-five years. The burden of taxation in Louisiana is out of proportion to what it is in other states. As we in this state have ventured further on the road toward the welfare state than the other members of the Union, it is timely that our citizens — including the physicians — consider our position.

During the next ninety days the Legislature of the State of Louisiana will meet and levy taxes for the one or two years ahead. During that time theories will be advanced, plans made, and appropriations requested that will affect the practice of medicine, the interests of the physician, and the position of the taxpayer. Physicians will be asked their opinion in such matters in regard to the professional and the financial feasibility. They will find themselves in need of facts upon which to base an opinion.

The reports of the Public Affairs Research Council of Louisiana give information of great value on the taxation phase of Louisiana government, but particularly, on the welfare program. Reviewing the salient features of reports made in 1954 and 1955, it is shown that the statement that Louisiana is venturing further toward the welfare state than any other is amply justified. The number of taxes levied by the state government of Louisiana has increased from 4 in 1921 to 48 in 1953. The revenue yielded by these taxes amounted to $299,857,903.55 in the fiscal year 1951 - 1952, or about twenty-four times as much as in the 1921 yield of $12,500,000. Public welfare cost $110,000,000, which was 29 per cent of all state expenditures in the fiscal year 1953. More than 8 persons out of every 100 in Louisiana were receiving public assistance in 1953. This is the highest rate in the nation and more than double the national average of over 3 persons per hundred. In 1953, Louisiana had 604 out of every 1000 persons over 65 receiving old age assistance. This is the highest in the nation and is more than three times the national rate of 191. Disability assistance was received by 8.7 persons out of every 1000 between the ages of 18 and 65. This also is the highest rate in the nation and more than three times the national rate of 2.6. Public assistance in Louisiana cost $39.85 per capita in 1952. This is the third highest in the nation and double the national average of $17.67. During the same year Louisiana ranked fortieth in per capita income. In 1952, Louisiana

ranked ninth among the states in total state tax collections with $283,158,000, but at the same time Louisiana's per capita state tax collections of $102.70 were the second highest among the states, being slightly exceeded by Washington with a per capita state tax of $102.72. The average among the states is $64.48. However, Louisiana ranked first in the ratio of state tax collections to personal income, which is a measurement of the ability to pay. From every $100 of personal income in Louisiana in the calendar year 1954, $8.09 was collected in state taxes. The national average was $4.09. In June 1953, 215,772 people were receiving public assistance.

One of the major factors influencing dependency is the income of the state's population. The median income for 1949 in Louisiana was 30 per cent lower than the median income for the United States. An aged couple receiving maximum old age assistance grants enjoys a higher income level than many Louisiana citizens. The level of education contributes in some measure to this dependency. In 1950, Louisiana led the nation in the proportion of functionally illiterate persons in its population, which was 29.5 with a national average of 11.1 per cent. Louisiana's percentage of the population in the labor force was 49.3. The national average is 53.3 per cent. While Louisiana had 42.8 per cent under 19 and over 65, the national average is 39.2 per cent.

This startling array of facts compiled by PAR shows that Louisiana has the highest rate of taxation and is in the poorest condition to pay such taxes. Accordingly, when support is sought for measures designed to increase the taxation, these facts should be mentioned. When the building of additional charity hospitals is proposed it should be shown that we now have the highest number of charity beds per capita of any state in the nation, with eight charity hospitals strategically located and twelve private hospitals with contract charity beds. There are approximately three free beds to each pay bed in Louisiana.

When additional programs in the direction of luxury government are advocated, it should be pointed out that education, public welfare, and debt service took 65 per cent of the $384,000,000 state government expenditures in 1953. When local, state, and federal taxes are added, the result is a burdensome total. This has been variously calculated, for the nation as a whole, as being about 27 per cent of total national income at present. This would be greater for Louisiana citizens because our per capita tax is about twice the national average.

An eminent economist has shown that when taxation significantly exceeds 29 per cent of national income, inflation or depression must follow. Nationally, we are approaching that figure, and locally, we have probably exceeded it.

Economics has been called a dismal science, and there is little in the tax situation in Louisiana to contradict that opinion.

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

MAX MAYO GREEN, M. D.
President
1955 - 1956

Dr. Green is now approaching the final milestone in his office as President of the State Society and he has rendered a wonderful service to our members. His genial, good natured approach to the solution of the many problems presented, has endeared him to a great majority of our members. This has been a year of decision, requiring great insight, mature judgment and forethought in acting in the best interest of our members, and Dr. Green has handled the affairs of the Society in a commendable manner, with partiality to no one. He has always striven to face his responsibilities with the idea uppermost in his mind, that there are always two sides to every question, and any decision arrived at must be made in the interest of all of our members.

Dr. Green has been quite active in attending component parish and district society meetings, fraternizing with members, thereby creating a closer grassroot relationship between the members and the headquarters office.

Our President was born in Oakland (Union Parish), Louisiana and received his early education at the Mer Rouge Public High School. He received his B.S. degree from Tulane in 1927 and in 1929 received his M. D. degree from Tulane Medical School.

He was licensed to practice medicine by the Louisiana State Board of Medical Examiners in 1929. He served as an intern at Charity Hospital in New Orleans 1929-30 and was a Resident in Urology from 1930 to 1932. On completion of his training at Charity Hospital, he began the practice of medicine in New Orleans, where he has enjoyed an active practice in his chosen specialty of urology, since 1932.

Dr. Green is a member of the visiting staffs of Southern Baptist, Mercy, Hotel Dieu and Charity Hospitals, in New Orleans, serving as senior urologist at these respective hospitals.

He is also a member of the Orleans Parish Medical Society, having served as its President in 1948. He is a member of the New Orleans Graduate Medical Assembly, having served as its Secretary. Other organizations in which he holds membership are the American Medical Association, American College of Surgeons, American Urological Association and he is a Diplomate of the American Board of Urology.

Dr. Green is Assistant Professor of Urology in the Louisiana State University Medical School.

He is quite active and has shown great interest in civic and community problems, having served as Chairman of the Medical Committee of the New Orleans Chamber of Commerce. He is also a member of the Louisiana Health Council and has shown a great interest in the problems of this Council.

He has been active in fighting for Organized Medicine in all of its phases. He is vitally interested in our public relations and educational program and has been cooperating with our Public Relations Counselors and Legislative Consultant in programs outlined and instituted for the good of the Society.

The members of this Society have been very fortunate in having Dr. Green as their President for the past year. He has shown a keen interest in all matters connected with the Society and it is our sincere desire that he will continue to be active and to give us the benefit of his wise counsel during the coming years. The members want to assure you, Dr. Green, that they are not unmindful of your great service to the Society and will be forever grateful to you.

AMERICAN MEDICAL ASSOCIATION RURAL AND URBAN HEALTH COUNCIL MEETING

This meeting was held in Portland, Oregon on March 9-10, 1956, and was preceded by a meeting for discussion of rural health problems by representatives of state committees.

Dr. W. J. Weese of Ontario, Oregon, presided at the meeting and greetings were extended by Dr. I. C. Munger of Vancouver, Washington, who is President of the Washington State Medical Association. Theme of the pre-conference meeting was "The Doctor's Responsibility In The Physician-Patient Relationship" and "The Over-All Health of The Community". Dr. F. S. Crockett, Chairman of the American Medical Association Rural Health Council discussed the Physician-Patient Relationship, and Dr. B. C. Farrand, Chairman of Committee on Rural Health, Jordan, Montana, discussed the Over-All Health of the Community. This was followed by Dr. J. E. Zimmerman of Tieton, Washington, who discussed "Getting the Patient's Cooperation in Rendering Medical Care". After this discussion Dr. Herbert E. Mason, Chairman of Committee on Rural Health, Beaverton, Oregon discussed "Advising the Family in Physical Examinations and Dr. Murland F. Rigby, Chairman of Committee on Rural Health, Rexburg, Idaho, presented "Community Health Survey and Its Part in the Family Relationship".

The Conference was opened on Friday morning, March 9, with the subject of mental health as the conference problem. It was followed by "Problems of the Aged" discussed by Dr. Robert Heilman of Portland, Oregon. Friday afternoon, "Uses and Abuses of Health Insurance" was discussed. An evening of entertainment followed the banquet which was held at 7:00 P.M. Friday.

Saturday morning a symposium on "The How, What and Why of a Dental Project" was given, followed by a series of health problems. There were excellent discussions from farm, the press, and the extension services.

All in all, the conference was very good and very well attended.

The chairman of the Louisiana Rural and Urban Health Committee, Dr. J. P. Sanders of Shreveport, and Dr. M. C. Wiginton of Hammond, attended the meeting in Portland. Of the 11 council meetings, each has attended 10.

BLOOD BANKS OPERATING IN LOUISIANA *

Following is information concerning blood banks operating in Louisiana which has been furnished by Dr. J. W. Davenport, Jr., Chairman of the Committee on Blood Banks of the State Society:

ALEXANDRIA

Baptist Hospital
Dr. E. C. Uhrich
St. Francis Cabrini Hospital
Dr. John B. Maxwell

BATON ROUGE

Baton Rouge General Hospital
Dr. S. H. Colvin or Dr. W. S. Randall
Our Lady of the Lake Sanitarium
Dr. A. L. McQuown or Dr. J. L. Bevan

LAFAYETTE

Lafayette Charity Hospital (cw)
Dr. L. L. Swan or Miss Hermine Tate, M.T., BBT (ASCP)
Southwest Blood Bank, Inc.(**) (cw) (x)
Head Office Phoenix, Ariz., Mr. W. Quinn Jordan, Executive Director

LAKE CHARLES

Memorial Hospital
Dr. Louis A. Hebert
St. Patrick's Hospital
Dr. Andrew Ranier

MONROE

St. Francis Sanitarium
Dr. N. Klam

NEW ORLEANS

Charity Hospital (cw), 1542 Tulane Ave, zone 12
Dr. John Adriani or Miss E. Boudreaux, M.T. (ASCP)
Flint-Goodridge Hospital (c), 2425 Louisiana Ave., zone 15
Dr. A. J. Bloom or Mr. C. C. Weil, Administrator of Hospital
Hotel Dieu (w), 2004 Tulane Avenue, zone 19
Dr. R. M. Hartwell or Dr. A. Y. K. Hew

Mercy Hospital (w), 301 N. Jefferson Davis Pkwy., zone 19
Dr. George H. Hauser or Dr. Evelyn Nix
Ochsner Foundation Hospital (w) (**), 1516 Jefferson Highway, zone 21
Dr. G. M. Carrera or Mrs Mary Wright, M.T., BBT (ASCP)
Sara Mayo Hospital (ew), 609 Jackson Ave., zone 13
Dr. W. H. Harris, Jr.
Southern Baptist Hospital (w), 2700 Napoleon Ave., zone 15
Dr. J. W. Davenport, Jr. or Miss Frances Street, M.T., BBT (ASCP)
Touro Infirmary (w), 3500 Prytania Street, zone 15
Dr. J. W. Davenport, Jr. or Miss Ula Troxler, M.T., BBT (ASCP)
U. S. Public Health Service Hospital (ew), 210 State St., zone 18
Dr. W. H. Monroe, Chief of Laboratory Service
Veterans Hospital (ew), 1601 Perdido Street, zone 12
Dr. P. Pizzolato or Dr. J. Ziskind

PINEVILLE

Huey P. Long Charity Hospital (ew)
Dr. E. C. Uhrich

SHREVEPORT

Confederate Memorial Hospital (ew) (formerly Shreveport Charity Hospital), 1541 Kings Highway
Dr. S. D. Cummins or Dr. G. M. Harwell
Memorial Blood Bank of Shreveport (**) (x) (ew)
1541 Kings Highway
Dr. S. D. Cummins or Dr. W. R. Matthews

* SYMBOLS:
(**) Indicates federal licensure
(x) Indicates bank operating as separate unit (i.e. **not** as a hospital department). With the two exceptions noted, all Louisiana blood banks are operated by hospitals.
(ew) Indicates blood bank which routinely receives white and colored donors.
(c) For colored only
(w) Indicates blood bank which routinely receives blood only from Caucasian donors. Such banks, however, **issue** blood in accordance with patient's need—regardless of race.

Name(s) of blood bank medical director(s) and/or other Senior Supervisory personnel are shown for each institution.

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MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Tangipahoa	Second and fourth Thursdays of every month	Independence
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

THIRD NATIONAL CANCER CONFERENCE

The American Cancer Society and the National Cancer Institute will co-sponsor the Third National Cancer Conference which will take place June 4-6, 1956, at the Sheraton Cadillac Hotel in Detroit, Michigan. (See inside back cover.)

Principal lecturers will be Dr. Jacob Furth of Children's Cancer Research Foundation, Boston, who will discuss radiation and neoplasia; Dr. Wendell M. Stanley, Director of the University of California's Virus Laboratory, who will speak on the virus etiology of cancer, and Dr. Fred W. Stewart, pathologist of Memorial Center for Cancer and Allied Diseases, New York, who will speak on factors influencing the curability of cancer.

The major portion of the conference will be devoted to symposia on cancer in various sites. Topics and chairmen of the planning committees for each of the symposia are: breast cancer, Dr. Ian Macdonald; lymphomas and leukemias, Dr. William Dameshek; prostate cancer, Dr. Perry Hudson; cancer of the gastrointestinal tract, Dr. George T. Pack; cancer of the lung, Dr. Eugene P. Pendergrass; chemotherapy in cancer, Dr. C. P. Rhoads; cancer of the female genital tract, Dr. Joe V. Meigs; cancer of the head and neck, Dr. Danely P. Slaughter; and end results, Dr. Michael B. Shimkin.

All physicians are cordially invited to attend.

EVALUATION OF CANDIDATES FOR PORTACAVAL SHUNTS AVAILABLE AT TOURO INFIRMARY

Through the facilities of the Touro Infirmary Cardiac Research Laboratory, arterial oxygen determinations, cardiac catheterization for the clinical diagnosis of heart diseases, and hepatic vein catheterization for evaluation of candidates for portacaval shunts are now available at Touro

Infirmary. These studies will be conducted by physicians in New Orleans who have had training and experience in performing these procedures.

Because these procedures are available through research facilities supported by a research grant from the John A. Hartford Foundation, New York, no charge will be made to these patients.

For those patients who are hospitalized solely for the research diagnostic procedures and patients who are unable to afford hospitalization, funds are also available from the research grant to pay for these days of hospitalization necessary for these studies.

Private patients admitted to the hospital, not solely for these research diagnostic procedures, but who undergo them during the course of their treatment in the hospital, will be responsible for the cost of their hospitalization. In the event these procedures prolong the patient's period of hospitalization, research funds will be utilized to pay for the prolonged period of hospitalization. Patients who upon the completion of their studies require more prolonged hospitalization for either diagnostic or therapeutic purposes will be expected to pay for the additional period of hospitalization.

Further information can be obtained by contacting the Director of Touro Infirmary.

55TH ANNUAL MEETING MEDICAL LIBRARY ASSOCIATION

The Medical Library Association will hold its 55th annual meeting from June 18 to 22 at the Hotel Statler in Los Angeles, Calif. The program will include a tour of the new UCLA Medical Center in addition to addresses by Dr. Charles W. Schilling, U. S. Naval Academy, Dr. W. L. Halverson, Professor of Public Health, U C L A, Dr. Cyril B. Courville, Professor of Neurology, College of Medical Evangelists, Dr. Stafford L. Warren, Dean of the U C L A Medical School and others prominent in the field. Further information can be obtained from Mrs. Ella Crandall, Librarian, Los Angeles County General Hospital, 1200 No. State St., Los Angeles 33, Calif.

AMERICAN COLLEGE OF CHEST PHYSICIANS

The 22nd Annual Meeting of the American College of Chest Physicians will be held at the Hotel Sherman, Chicago, Illinois, June 6 through 10, 1956. The scientific program will include prominent speakers on all aspects of heart and lung diseases. In addition to formal presentations, there will be a number of symposia, round-table luncheon discussions, seminars, and motion pictures.

The Fireside Conferences, which were inaugurated at the annual meeting of the College in 1955 and proved to be so popular, will be repeated. At this session, more than 50 experts will be present to lead the discussions on many subjects of current interest in the specialty of diseases of the chest.

Examinations for Fellowship in the College will be held on Thursday, June 7. On Saturday evening, June 9, more than 150 physicians will receive their certificates of Fellowship at the annual Convocation, which will precede the Presidents' Banquet.

All interested physicians are cordially invited to attend the 22nd Annual meeting of the College; there is no registration fee. Copies of the program may be obtained by writing to the Executive Offices, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

RESERPINE HELPS ARTHRITIS, DELIRIUM TREMENS PATIENTS

Reserpine, a tranquilizing drug, has now been used to treat two more disorders—delirium tremens and arthritis.

New York and Los Angeles physicians reported in the Dec. 17 Journal of the American Medical Association using reserpine (Serpasil), a derivative of Rauwolfia serpentina, for two groups of patients. The results warrant further trial of the drug as a method of treating both disorders, they said.

Drs. Milton Avol and Philip J. Vogel, Los Angeles, who treated 24 patients for delirium tremens, said reserpine "greatly shortened" the time necessary to free alcoholic patients of their agitation and hallucinations. In fact, all but three were relieved of their symptoms within 24 hours or less. The others were relieved within 48 hours. The average time was 18 hours.

Paraldehyde, a drug frequently used as a calming agent, takes much longer to produce desirable effects. In addition, chronic alcoholics very quickly develop a tolerance to paraldehyde, so that even large doses are ineffective or only partially effective, they said. Also the odor of paraldehyde pervading the wards is "distressing" to both patients and ward personnel.

NEW TREATMENT OFFSETS DELIRIUM, COMA IN PATIENTS WITH DISEASES OF THE LIVER

A new treatment for cirrhotic patients who become mentally confused or stuporous and are in danger of going into permanent coma has been developed by a Boston physician and two associates.

Writing in the *New England Journal of Medicine*, Dr. W. V. McDermott Jr., of Massachusetts General Hospital, spells out, for the first time, the conditions in which glutamic acid, a compound found in most proteins, can be used to bring cirrhotic patients out of hepatic coma.

Long a confusing clinical syndrome, hepatic

coma occurs when the apparently well-oriented patient with liver disease, one day suddenly becomes unduly drowsy, is aroused with some difficulty, and speaks with slurred or thick speech. After a period of noisy confusion and delirium, unconsciousness sets in.

In certain patients this chain of events can be broken by L-glutamic acid, the Boston medical team has found. These are patients—probably the largest percentage composed of chronic alcoholics—in whom hepatic coma is precipitated by a high protein diet, treatment with a diuretic, or sudden bleeding in the gastrointestinal tract. Their already damaged livers cannot stand the additional strain and they suddenly become confused and disoriented.

CONGENITAL ANAL DEFORMITIES

Congenital deformities of the anal canal have been found in "from 8.7 to 30 per cent of all infants examined," according to Edward F. Sladek, M. D., reporting in *American Journal of Surgery* 90:860 (Nov.) 1955. He notes that "diseased conditions of the anus in infants and young children are present with much greater frequency than is commonly suspected."

"A fissure may be a complication of congenital or other diseased conditions of the anal canal," he says, and suggests that a "more radical approach be given to the problem of anal disease in infants and young children."

MEETING SITE OF THE AMERICAN ASSOCIATION OF BLOOD BANKS CHANGED

The site of the 9th Annual Meeting of the American Association of Blood Banks previously scheduled for Cincinnati, Ohio, November 4-7, 1956 has been changed. The meeting will be held September 3, 4, 5, 1956 at the Somerset Hotel in Boston, Massachusetts. Inquiries should be directed to Miss Marjorie Saunders, Secretary, 725 Doctors Building, 3707 Gaston Avenue, Dallas, Texas.

BOOK REVIEWS

Potassium Metabolism in Health and Disease; by Howard L. Holley and W. W. Carlson, New York—Grune and Stratton, 1955, Pp 131, Price $4.50.

The book is commendable for a short, but not necessarily inexpensive, look at potassium metabolism. It is stronger on symptomatology of hypokaliemia than many. This is set off with adequate coverage of the pharmacodynamics of potassium. Potassium as an activator of enzyme systems is stressed in the light of the possible relation to muscle strength.

Loss of potassium through the kidney because of cortical hormone (stress) is well treated. In general all hormone action is well done. The other avenues of potassium loss are described in detail and the discussion of patients is adequate.

The book is completely lacking in the presentation of mechanisms for ion transport. This weakens the book's advantages for medical groups. The authors seem to avoid these mechanisms in that they hardly mention Darrow's ion exchange in muscle or Berliner's discussion of how alkalosis drains off potassium through the kidney.

The worst feature is the complete absence of cited references. The reader has no way of evaluating the ideas presented, many of which are given without evidence.

ALAN G. C. WHITE, M. D.

Doctors in the Sky; The Story of the Aero Medical Association; by Robert J. Benford, M. D., with Foreword by John F. Fulton, M. D., Charles C Thomas, Springfield, Illinois. 1955 Pp 326. Price $8.75.

This is an account of the formation and of the activities of the Aero Medical Association for its first 25 years. Tribute is paid to the founder, Dr. Louis H. Bauer, and to the various individuals who succeeded him in guiding the development of the Association. Short biographies of the successive presidents are presented as are anecdotes relating to members and to meetings. For the most part it is a direct, factual, and chronological account and serves as a good documentary history of the men who were important in aviation during the last 25 years. As such, it will interest those who participated in the progress. It is not a history of the progress of aviation. The volume would have been of more general interest if the author had included more material relating to the contributions of the various individuals to aviation rather than to the activities of the Association. This may be an unfair criticism, however, since the author has succeeded in his primary objective of giving an account of the activities of the Association.

H. S. MAYERSON, M. D.

PUBLICATIONS RECEIVED

W. B. Saunders Co., Phila.: A Modern Pilgrim's Progress for Diabetics, by Garfield G. Duncan, M. D.; Diseases of the Chest, by H. Corwin Hinshaw, M. D., and L. Henry Garland, M. B.

Charles C Thomas, Publisher, Springfield, Ill.: Clinical Management of Renal Failure, by Maurice B. Strauss, M. D., and Lawrence G. Raisz, M. D.; Allergy in Childhood, by Jerome Glaser, M. D.